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AUTOMOTIVE INDUSTRIES
VOLUME 58 *Philadelphia, Saturday, January 21, 1928* NUMBER 3

"*Go*" is Present Keynote in Traffic *Regulation*

Nation has awakened to realization that cars must be kept moving to solve problem of congestion.

By John C. Long

Manager Educational Department,
National Automobile Chamber of Commerce

IF we could only drive all the automobiles into the Potomac River we wouldn't have any traffic problem," said a delegate to a recent City Planning Conference in Washington, D. C.

This drastic view, although expressed half in jest, is nevertheless a reflection of the attitude which has prevailed toward the motor vehicle in many quarters until the past year or two.

The automotive groups themselves, however, have kept championing the idea that "Go" should be the signal in the solution of city traffic rather than "Stop."

It is logical to expect that the motor associations and publications should be the first to have the vision on this problem because these are the people who are giving daily attention and study to transportation. They are the forces who conceived and helped to bring about the national rural highway program.

Roy D. Chapin, as chairman of the Highways Committee of the National Automobile Chamber of Commerce, and A. G. Batchelder, general manager of the American Automobile Association, did not meet the problem of rural highways by saying, "Automobiles are making our mud roads muddier. We must have traffic officers and regulation to keep cars off the highways." They pointed rather to the need of modern surfaces to meet modern needs.

Macauley and Metzger Active

Similarly, Alvan Macauley, chairman of the Street Traffic Committee of the Automobile Chamber, and William E. Metzger, a director of both the Chamber and the American Automobile Association, have been directing public attention to the fact that the real job to be done is to provide methods whereby the vehicles can move more effectively and more safely.

Mr. Macauley, for example, has proposed that the escalator principle could be applied to pedestrian bridges or subways where traffic was heavy enough to warrant it. This measure has now been indorsed by civic bodies in New York to relieve the congestion in the mid-town section. The mayor has named a committee to report on the best location and possible cost.

Mr. Metzger has suggested that on busy thoroughfares the pavement should be laned with white paint and the different speed regulations indicated to prevent the loafing driver from hugging the center of the road, and to remind motorists of the proper speed. The laning idea is now being tried out by Westchester County, N. Y., officials.

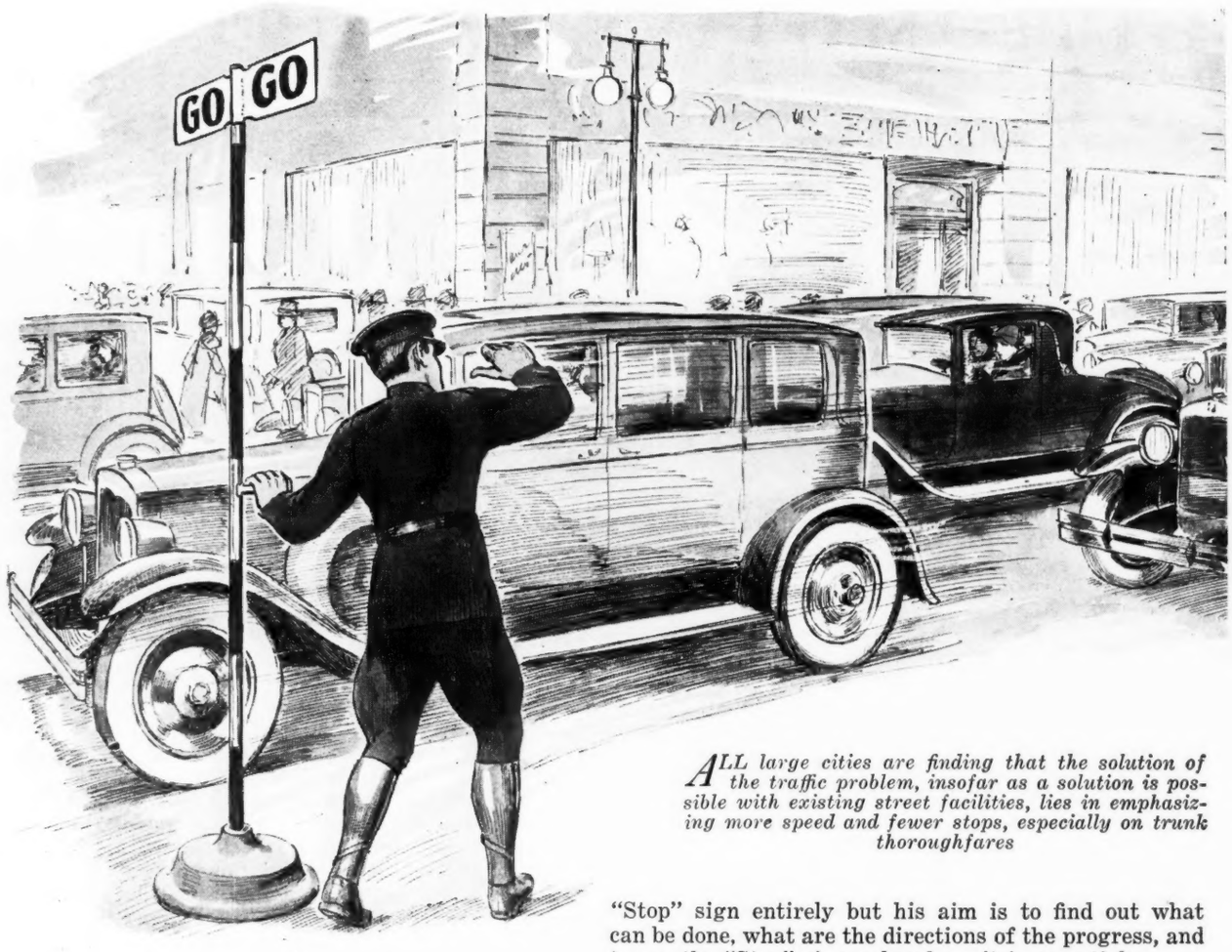
These are but two instances of the general trend which is now pointing toward better movement of traffic rather than its curtailment.

Significant Development

This change in the direction of the public mind is the most significant development in the handling of modern traffic. As long as the emphasis remained on the restrictive regulation there could be no outlook for improvement. Try to deal with congestion by the use of "Stop" signs, and you simply continue to pile up traffic. Everyone recognizes, of course, that there must be rules of the road, but to deal with traffic primarily in terms of more police officers, more laws, more restrictions, is like blockading a harbor because it has more shipping than the docks can accommodate. You cure the dock problem but you ruin the port.

As time has given the public a clearer perspective on the National Conferences on Street and Highway Safety called by Secretary Hoover, it has become evident that these events serve to simplify the view of officials upon regulation and to handle the subject in a constructive way. The object of the Hoover meetings has been to reduce the multiplicity of laws and to set up simple, effective principles which can be observed in all parts of the country as the basis for regulation.

Recognizing the value of this procedure with respect to state legislation, the same groups which participated in the earlier conferences are now working on proposals for a uniform municipal traffic ordinance. The committee includes city officials, representatives from all



ALL large cities are finding that the solution of the traffic problem, insofar as a solution is possible with existing street facilities, lies in emphasizing more speed and fewer stops, especially on trunk thoroughfares

transportation groups, delegates from safety organizations, and persons from other associations not professionally concerned with traffic. W. E. Metzger is chairman of this committee.

The significance of the Hoover Conferences and of this present committee which was also called together by Secretary Hoover, lies in the fact that the subject has been approached as a transportation problem—not as a police problem. Transportation men know that safety is a paramount issue and that policing is necessary, but they view the situation from the standpoint that all these angles are operating matters, and that results can be obtained effectively only if there are the right facilities and the right methods of operation.

A Difference in Minds

There is a vast difference in method between that of the executive mind and that of the police mind, even when each has the same ultimate goal. The police mind for example demands that all unfit drivers be kept off the road. No one can quarrel with this thought as far as it goes. But Dr. Knight Dunlap, working with the Highway Research Board, brought out at its recent conference that we must approach the question of unfitness from a scientific standpoint.

Some persons are inherently unfit. Others have certain disturbances or lack of training which can readily be adjusted. In still other cases the signs and regulations at given intersections are of such a nature as to promote misunderstanding and to place undue blame on the individual.

The executive does not wish to do away with the "Stop" sign entirely but his aim is to find out what can be done, what are the directions of the progress, and to use the "Stop" sign only where it is essential.

The difference which the point of view makes in the handling of city traffic matters is well exemplified in the progress which has been effected in Chicago. Dr. Miller McClintock, director of the Albert Russel Erskine Bureau for Street Traffic Research, about two years ago was invited by the Chicago Association of Commerce to develop a motor vehicle ordinance for that city based on detailed survey of conditions. In the past year Chicago has passed an ordinance not entirely in line with the McClintock report but similar to it in most of its principles. The public has been receptive to this ordinance because it knows that the effort has been made to find the most immediately effective means of handling the traffic, and because the spirit has been one of trying to organize the job in an effective way rather than by the use of restrictions.

In connection with this effort, E. J. McIlraith, staff engineer of the Chicago Surface Lines, has worked out for the city a series of time studies and time regulation devices for the traffic signals. As a result of this the average speed in the Loop district has been increased several miles an hour. Traffic through the congested sections of Chicago proceeds on an average of from eight to 12 miles an hour. Those who are familiar with the records realize that this is a high average compared with the other large cities of the country.

Fundamentally, the answer to most of the traffic difficulties in cities is to be found in the creation of more facilities. That fact has been increasingly realized in 1927 and will be the main stream of thought on traffic in the next few years.

It has been said that the modern city is still in the

age of the horse-drawn carriage as far as street facilities are concerned. But the condition is not as happy as that. In the days of the horse vehicle every public building, every church, and most of the stores had their hitching posts and wagon sheds for visiting vehicles. The congested sections of the cities today have built up to limits of their property and have torn down the hitching sheds without providing automobile parking places.

It was inevitable that that type of procedure would ultimately defeat itself. Merchants are at last beginning to realize that unless they can accommodate their customers, a crowded street in front of the store does not yield a profit. Jordan, Marsh & Co. of Boston provides a parking garage for its customers. The new Fisher Building in Detroit is to have garage accommodations for its occupants.

It has been pointed out, however, that the vast needs for parking garages in down-town cities could not possibly be cared for in the limited amount of space that is available. This is a sound observation and leads to the inevitable conclusion that many of our larger cities are overbuilt. It clarifies the fact that no community can exist satisfactorily without adequate terminal facilities.

Occasionally street railways and other public service groups have greeted this conclusion with enthusiasm. They have pointed out that automobiles must be barred from down-town districts because it is uneconomic to park them, and that parking terminals cannot be provided in quantity. The situation, however is not quite as happy for the electric lines as it might appear at first glance. The addition of more electric line communication in that kind of a situation simply breeds its own difficulties, as J. Rowland Bibbins has pointed out. New subway lines in New York City, for instance, become more crowded in spite of the recurring additions to transportation of this sort.

The answer is to be found in the decentralization of cities with the laying out of new communities having adequate facilities for all types of transportation.

That is the long range point of view which has already been adopted by such cities as St. Louis and Detroit, which have planned programs stretching over a period of years.

The cities, however, are not waiting until they can be redesigned to handle their need for immediate improvement. There are certain fundamentals in the science of street construction which can be put into effect promptly. and without great difficulty.

The most important of these from the standpoint of clearing traffic rapidly is the building of overpasses at busy street intersections. The overpass does away with the present uneconomic condition under which the city street space is useless 50 per cent of the time. A system of progressive traffic signal lights under certain conditions does away with this waste of street space, but under many circumstances signals cannot handle the situation. Where two busy streets intersect one another the traffic on either must wait 30 seconds and then proceed 30 seconds, or whatever the signal interval may be. If the cycle is 90 to 30, then one street is used three quarters of the time but the other is unused three quarters. Grade separation has been introduced in Lincoln Park, Chicago; in Los Angeles, in Detroit and in many other locations throughout the country.

Two-level streets will be built only in exceptional geographical circumstances, because in most cities double-decking will not be necessary when an adequate number of separations have been effected.

Brief reference has been made to the activities of the American Automobile Association and the National Automobile Chamber of Commerce. Space is not available to deal with the details of the programs of these and other bodies. The industry, the automobile clubs and the motor associations are regarding traffic as one of the major problems of the day and are emphasizing that hit-or-miss methods will no longer serve.

Truck Study in Hartford

An example of what this means in practical terms is seen in the study of the truck transportation situation in Hartford, Conn., where a survey has been concluded by the Motor Truck and Street Traffic Committee of the National Automobile Chamber of Commerce in collaboration with the State Motor Vehicle Department and local groups in Hartford. This study undertook a detailed analysis of all the motor truck accidents, mapping out where these occurred, what the circumstances were, who the drivers were, whether the intersection was guarded, and all other elements which would serve to be a guide in the prevention of future accidents.

This has been followed through by a presentation of the data in booklet form to every truck operator in the city of Hartford. The city officials have made certain changes in the regulation of traffic at given points which were revealed to be dangerous. The data has been presented to the engineering department of the city as an indication of some of the engineering problems that are involved. Improvement of operating personnel is being brought about by training classes.

This is but one of a number of instances throughout the country which signals the advent of the scientific and organizing mind into the field of the traffic problem. As in any public enterprise the effort is beset with political difficulties, but it concerns the mass of citizens so directly that public support can be enlisted for constructive measures.

The theory frequently expressed that traffic will get worse and worse is fallacious. The history of American experience is that the public doesn't get aroused until it has been made thoroughly uncomfortable. Once that occurs it gets busy and gets results. Traffic discomforts have reached a peak in many communities, and the next few years will be years of solution of these difficulties.

Stewart-Warner One *of* Most *and* Accessories

Has long record of substantial earnings and dividend payments, and in stability and growth compares favorably with majority of motor car manufacturing companies.

WITH a long record of substantial earnings and dividend payments, the Stewart-Warner Speedometer Corp. is one of the most conspicuously successful of the automotive parts and accessory companies. In stability and growth, in fact, its history compares favorably with the overwhelming majority of motor car manufacturing enterprises.

The manner in which Stewart-Warner's expansion was brought about is particularly noteworthy. Numerous new interests were acquired through mergers over a period of years, the acquisition not only resulting in a diversification of product, but adding more than proportionately to the earning power of the Stewart-Warner company.

The company has always been strongly entrenched financially, and especially so in recent years, due to the accumulation of tangible assets. Its current outlook must be considered unusually good, as it is supplying speedometers and Alemite systems for the new Fords, a source of income not hitherto available.

Although Stewart-Warner products go into many different industries, there is reason to believe that the company is still dependent upon automotive business for a very large share of its income. Sales of non-automotive lines doubtless exercise a stabilizing influence, but quarterly earnings are highly sensitive to the curve of automobile production. Radio business, it is hoped, will eventually take up the mid-winter slack in factory shipments, but even without aid from these sources the company has proved that a most profitable business can be done with automotive units and accessories.

The present company dates from Dec. 20, 1912, when it was incorporated under the laws of Virginia to acquire all the patents, business and capital stock of the Stewart & Clark Mfg. Co. of Chicago and the Warner Instrument Co. of Beloit, Wis. Subsequently other interests were absorbed, and for this reason the detailed figures covering the history of the company are not exactly comparable. This is particularly the case with data in the years up to 1921. The expansion of the company in the earlier period came principally from mergers, as already noted, but the acquisitions were all profitable for the stockholders of the Stewart-Warner Speedometer Corp.

In the last eight years, including an estimate of 1927 results, the company has shown net income of approximately $36,147,500, of which $23,390,284 was paid in dividends and $12,757,216 was retained in the business. On the basis of the 599,990 shares of no par capital stock now outstanding, the annual average income has been about $7.52 a share, against a present dividend rate of $6 annually. But of course the earning capacity of the company has developed considerably in the eight-year period.

Stock changes after the organization, in 1912, of the Stewart-Warner Speedometer Corp. began in 1919, with

Growth of Liquid and Tangible Assets

As of Dec. 31	Current Assets	% of Total Assets	Property, Machinery, etc., After Depreciation	% of Total Assets	Other Assets†	% of Total Assets	Total Assets
1927*	$14,368,000	48.7	$14,049,000	47.7	$1,043,000	3.6	$29,460,000
1926	14,288,005	49.5	14,148,443	49	309,367	1.5	28,745,816
1925	14,729,514	50.6	13,521,364	46.5	784,789	2.9	29,035,668
1924	8,524,110	26	9,045,464	27	15,579,502	47	33,149,076
1923	10,774,442	38	6,229,802	22	11,233,481	40	28,237,735
1922	8,994,994	35	5,634,207	22	10,867,379	43	25,496,580
1921	7,167,717	30	5,792,176	24	10,910,347	46	23,870,240

* Sept. 30.
† Includes deferred charges, good-will in 1924 and prior years.

Successful *of* Parts Companies

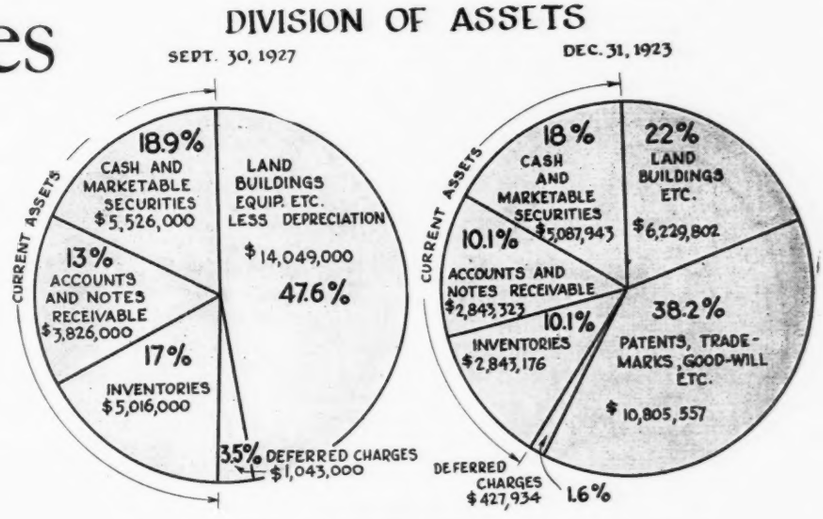
By John C. Gourlie

a four-for-one split-up. For 100,000 shares of $100 par common stock there were issued 400,000 shares of new no par stock. In June, 1920, the authorized stock was increased to 600,000, and 60,000 shares were issued in exchange for stock of the Stewart Mfg. Co., which has made die castings for a number of years. In 1926 the name of this subsidiary was changed to Stewart Die Casting Corp.

Early in 1921 certain assets, including the speedometer business, of the Van Sicklen Speedometer Co. were acquired in exchange for 15,000 shares of Stewart-Warner common and $725,000 cash.

The most important merger of the series came late in 1924, when a majority of the outstanding stock of the Bassick-Alemite Corp. was acquired on a 10 to seven exchange basis—10 shares of Bassick-Alemite for seven shares of Stewart Warner. Virtually all the stock was acquired a few months later, the whole transaction involving the issue of 125,000 shares of Stewart-Warner stock. The Bassick-Alemite Corp. owns the Bassick Mfg. Co. and the Bassick Co.

The various concerns which were joined to Stewart-Warner are operated as divisions, with a far-flung manufacturing and sales organization. The nine plants of the company and its subsidiaries are situated in Chicago; Bridgeport and Meriden, Conn.; Newark, N. J.; Belleville, Ont., and San Domingo, West Indies.



This comparison of balance sheets shows the effect of eliminating intangible items

The manufacturing space in these plants is over 2,000,000 sq. ft., the original plant in Chicago, which has been expanded and remodeled, alone comprising about 23 acres. Several thousands of acres of hardwood timberland are owned in San Domingo, the product being processed on the spot and used in various of the lines of the Bassick company as well as sold to other consumers.

In view of the great extent of these property and plant holdings, their balance sheet valuation as of Sept. 30, 1927—$14,049,000—would appear to be eminently conservative. The company's policy has been to keep its manufacturing facilities up to date and to make generous allowances for depreciation. The reserve for this purpose in 1926 was $913,000. Property valuation as of Sept. 30 was approximately $100,000 under the high mark which was reached at the end of 1926.

Net Earnings on Net Worth—1920-1926

(Years Ended Dec. 31)

	Net Worth††	Net Income*	Per Cent	Earned Per Share**
1926	$25,734,853	$5,108,885	20	$8.42†
1925	25,137,588	7,544,089	30	12.47†
1924	23,573,567	3,501,107	14.8	5.84
1923	15,218,886	6,728,119	44	14.16
1922	13,037,323	5,335,162	41	11.24
1921	9,774,404	1,039,573	10.5	7.08
1920	10,807,317	2,290,195	21	5.00

* After all charges, including depreciation and Federal taxes.
† After allowing for dividends on Bassick preferred stock.
†† Excluding good will.
** Outstanding at end of year.

Net Working Capital and Current Ratio

(As of Dec. 31)

	1927*	1926	1925	1924	1923	1922	1921
Net working capital†	$12,199,000	$12,277,042	$11,957,444	$7,240,170	$8,561,150	$7,314,531	$6,175,783
Ratio current assets: Current liabilities	6.6:1	7:1	5.3:1	6.6:1	4.9:1	5.3:1	7.2:1

* Sept. 30.
† Current assets minus current liabilities.

Due to the fact that growth has been partly through the acquisition of other companies, the results for the stockholders have not been quite as spectacular as if expansion has been entirely financed by retention of earnings. Yet dividends have been paid every year since organization of the company, and the four-for-one split-up has ultimately brought about approximately a quadrupling of the value of the stockholders' shares, since the dividend rate is now the same per share as it was on the old stock before the division.

Common stockholders currently have a virtually exclusive claim upon the earnings of the company. A small issue of preferred stock—$724,000—was retired in 1916. An issue of collateral trust notes of the Bassick-Alemite Corp., aggregating $875,000 on a recent date, is to be redeemed Feb. 1, 1928. The book value of the common shares on Sept. 30, 1927, was $44.03 per share.

Profits in Lean Years

The outstanding feature of the accompanying table showing net earnings over a period of years is the manner in which a fair margin of profit has been maintained in years of depression for the automotive industry, such as 1921 and 1924. The drop in 1926 took place entirely in the fourth quarter of the year, a consequence of the sharp and generally unforeseen decline in motor car production. Equipment makers always suffer severely when orders for their products are suddenly withdrawn.

The growth in net worth, good will excluded, is also brought out in the table. Net worth has expanded more than in proportion to the increased number of shares during the period covered, resulting in a greater book value for the stockholders' shares.

Another table, in which the assets are analyzed, shows the manner in which devalorization of patents, trade-marks, etc., has improved the balance sheet of the company. The intangible items are now carried at the nominal valuation of $1, whereas in 1923 they had reached $10,805,557. Instead of marking up the goodwill account when the Bassick interest was acquired, the company eliminated the item entirely, in the course of three years.

The heavy charges against surplus involved in the writing off of intangibles reduced the surplus account from $13,556,000 in 1923 to $5,103,000 in 1925, but later additions brought it up to $7,261,000 on Sept. 30, 1927.

The table showing the division of assets is somewhat askew in the column for 1924 figures, as the Bassick stock had just been acquired and was carried on the balance sheet as an investment ($7,149,185). It is grouped in the table under "other assets." In later years, of course, the assets of the Bassick-Alemite Corp. and its subsidiaries were consolidated on the balance sheet with those of the Stewart-Warner company.

The strong current position of the company and the manner in which working capital has been built up in recent years are shown in another table. The slight reduction as of Sept. 30, 1927, compared with Dec. 31, 1926, was due entirely to lower inventories on the later date. Cash and marketable securities on Sept. 30 reached a new high level, totaling $5,526,000, or approximately two and one-half times total current liabilities.

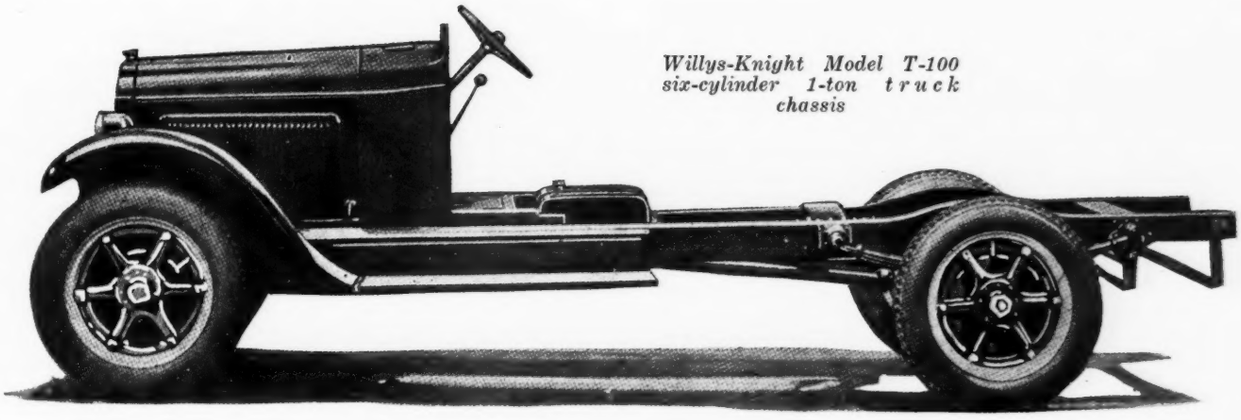
Stewart-Warner is, therefore, well fortified for future contingencies. The statement of earnings for 1927 is of course not yet available. In the first nine months net income was $4,198,633 after charges, equivalent to $6.99 a share on the common, against $4,808,350 in the same period of the previous year, equivalent to $8.01 on the common. In the final quarter of 1926, however, earnings dropped to 50 cents a share, and it is estimated that this figure was bettered in the closing quarter of 1927, so that the total for the entire year will not be far under the 1926 showing.

The Ford business, already referred to, did not add appreciably to 1927 earnings but 1928 should tell a different story, especially if the whole industry has a good year, as nearly everyone expects it to. Some items of equipment now being bought by Ford, it is reported, will eventually be made by the Ford company, but this would hardly apply to speedometers and the Alemite lubricating system.

In view of these considerations, Stewart-Warner seems headed for a record volume of business in 1928. With a $6 dividend, the stock at current levels around 81 is selling to yield about 7.4 per cent.

Volume 57 Index

THE Index to Volume 57 of *Automotive Industries*, including issues from July to December, 1927, is now ready for distribution. Copies will be sent to those subscribers who have been on previous index mailing lists. Other subscribers may obtain a copy upon application.



Willys-Knight Model T-100 six-cylinder 1-ton truck chassis

New Willys-Knight Trucks Range From 1 to 2½ Tons

Four six-cylinder Knight-engined chassis are equipped with pneumatic tires and four-wheel brakes. Prices on various models run from $1,095 to $2,595.

WILLYS-OVERLAND, INC., as mentioned briefly in last week's issue, has brought out a line of four trucks, all powered with six-cylinder Willys-Knight engines and equipped with pneumatic tires and internal four-wheel brakes. The capacity ratings are 1, 1½, 2 and 2½ tons. All models have unit power-plants, single-plate clutches, pump cooling, battery ignition, electric starting and lighting, seven-bearing crankshafts, vacuum feed from tank under the seat, tubular propeller-shafts, Hotchkiss type drive and metal spoke wheels.

Prices are: 1-ton, $1,095; 1½-ton, 134 in. wheelbase, $1,545; 152 in. wheelbase, $1,595; 2-ton, 150-in. wheelbase, $1,945; 64 in. wheelbase, $1,995; 2½-ton, 150 in. wheelbase, $2,545, and 164 in. wheelbase, $2,595.

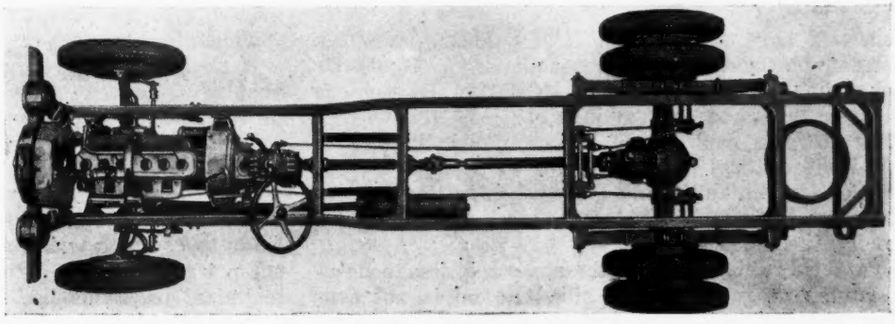
The 1-ton model has a wheelbase of 130 in. and the chassis weighs 2775 lb. It has a 2 15/16 by 3⅞ in. engine, three-speed transmission, spiral bevel rear axle with 6 1/7 to 1 reduction and 30 by 5 in. tires. The 1½-ton job is offered in 134 and 151 in. wheelbase lengths weighing 3300 and 3400 lb. respectively for the chassis. Its engine has a bore of 2 15/16 and a stroke of 4¾ in. The transmission provides three speeds forward and the tires are 30 by 5 in. front and 32 by 6 in. rear. The spiral bevel rear axle provides a reduction of 5.66 to 1.

Two wheelbase lengths are available on the 2-ton chassis also, the respective lengths and weights being 150 and 164 in. and 3800 and 3900 lb. The engine is a 3⅜ by 4¾ in. unit and a three-speed transmission is employed. Rear axle is a spiral bevel design with a reduction ratio of 5⅝ to 1. Tires are 32 by 6 in. front and 34 by 7 in. at the rear.

A double reduction axle with a 6.33 to 1 reduction is used on the 2½ ton model which has 32 by 6 in. tires with duals on the rear and a four-speed transmission. The engine is of the same size as that employed in the 2-ton chassis. Wheelbases of 150 and 164 in. are available and the respective chassis weights are 4920 and 5.30 lb.

Progressive Type Springs

All models have semi-elliptic springs all around but the three larger ones have the progressive type at the rear. Governors are fitted on all models except the one-tonner, the governed speed of the 1½-ton model being 45 m.p.h. and 40 m.p.h. for the 2 and 2½ ton chassis. Regular equipment includes tools, fenders, running boards, splash guards, cowl, instrument board with usual meters, including a speedometer, and floorboards.



Chassis of Willys-Knight six-cylinder 2½-ton truck

Production of *Synthetic Rubber* *an* Economic Problem

Technical obstacles have been largely eliminated but whether industry develops depends to great degree on how far restriction of natural output is carried.

By Ismar Ginsberg, B. Sc., Chem. Eng.

A RECENT remark by an official of the German dye trust that his organization "will be able to produce easily the raw materials for synthesis of rubber and gutta-percha by contact (or catalytic) synthesis" was hailed in many newspapers as an announcement of a revolutionary process for the commercial production of synthetic rubber. As C. C. Concannon, chief of the Chemical Division, Bureau of Foreign and Domestic Commerce, points out, however, it is highly important to note that the reference was to production of raw materials for rubber synthesis and not to the finished product.

The accompanying article by Ismar Ginsberg, consulting chemical engineer, discusses the difficulties experienced not only with obtaining cheap materials for the synthesis of rubber, but also of producing a product that has all the physical characteristics of natural rubber.

In view of the German report, the outline presented of previous discoveries and current research in the realm of synthetic rubber is particularly timely.

RUBBER holds a place of importance scarcely second to gasoline in the automotive industry. Automotive men therefore are vitally interested in anything affecting the rubber supply, and naturally might find much gratification in the discovery of any process whereby a synthetic product could be made.

Much has been said lately about the possibilities of synthetic rubber production and unless one is thoroughly familiar with the subject he is apt to get a wrong impression as to what actually has been or is likely to be accomplished in that direction.

It should be emphasized at the outset that the successful synthesis of rubber has a very distinct economic as well as a technical side.

The synthesis of rubber actually means the production of the rubber gum, just as it exists in the latex—the sap—of the rubber tree, from simple beginnings. We are not concerned here with an artificial rubber, something that can be used as a rubber substitute. Synthetic rubber has the same relation to natural rubber as synthetic indigo to natural indigo.

The story is well known how synthetic indigo replaced the natural indigo and released thousands of acres of land in India and elsewhere for the cultivation of foodstuffs which were otherwise used for growing the indigo plant.

Synthetic rubber has not the same relation to natural rubber as rayon has to silk. Rayon is not synthetic silk but merely a man-made product built up from cellulose. It does not really take the place of silk. Synthetic rubber will, however, take the place of natural rubber, if it is developed to a commercial stage.

The question, and this is the essence of the whole problem, is whether the economic conditions will ever allow this development to take place.

For, while it should not be thought that the last improvement has been made in the synthesis of rubber and that it has reached the acme of perfection, it is nevertheless true that the technical status of the development has progressed to a marked degree. Rubber is being synthetically manufactured on a technical scale both in Germany and Russia. But the economic status of the problem is still unsettled.

Whether or not synthetic rubber will develop largely during the next few years will depend to a great degree on the attitude of the British authorities who control the output of rubber from the Malay and Ceylon plantations.

If the price of rubber, that is, plantation rubber, is kept at its present artificial height, if the production of the plantation continues to be cut down in order to maintain a high price for rubber, there seems to be no reason to doubt that a synthetic rubber industry can well arise and build its structure on these economic conditions. Synthetic rubber might well be made to compete with natural rubber under the present price conditions (provided, of course, that all the technical problems had been solved), and the clear-headed student of economic affairs can well see that once an industry is founded and its initial difficulties

have been surmounted, its business established, its product recognized for its true value, it becomes intrenched in so strong a position that it cannot be removed therefrom except at great cost to him who attempts such an undertaking.

Thus if the rubber industry, as controlled by British interests, persists in its present attitude, it might well be that synthetic rubber will become a well-known commodity within a few years. What the natural rubber interests will do to prevent the loss of their market may not make much difference if the synthetic industry is allowed to develop until it attains a strong position.

Strong Potential Position

This is, in fine, the economic status of synthetic rubber. It has no importance at the present time and the automobile industry is not now purchasing tires and the like manufactured from synthetic rubber. But it has a strong potential position and it might develop into a big thing.

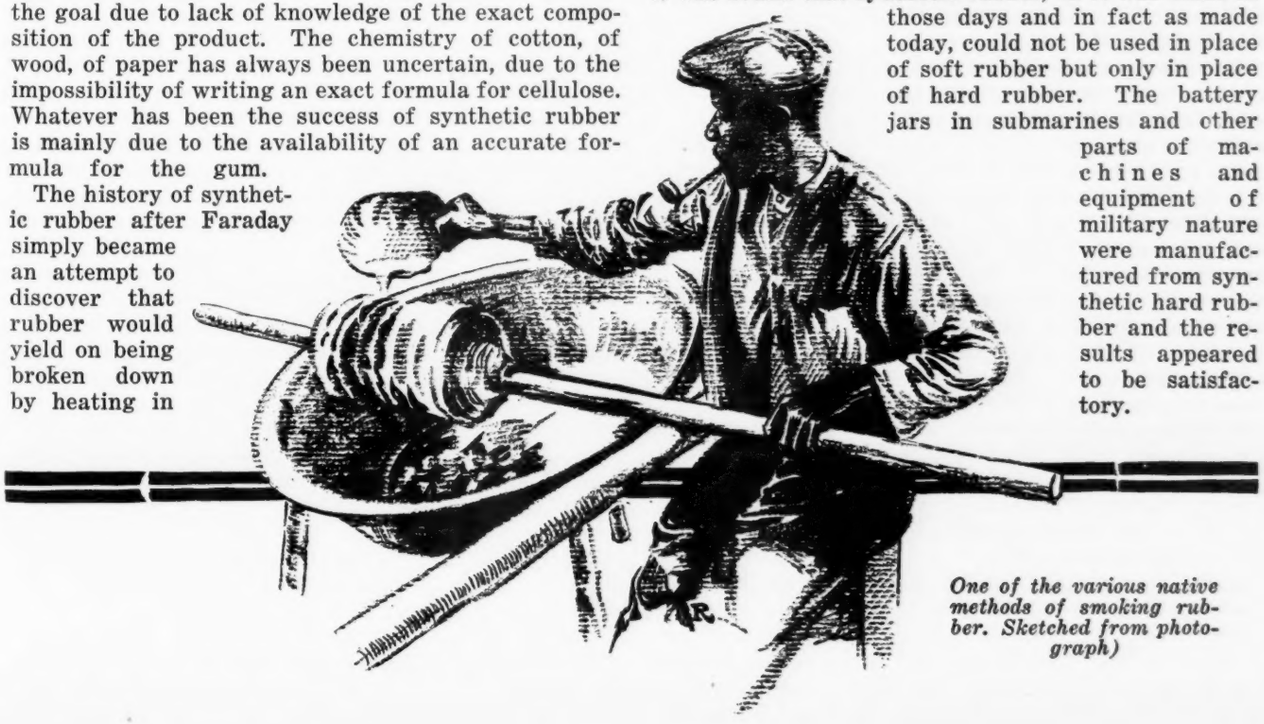
It is thus understandable that the history of synthetic rubber has been principally of a technical nature up to the present time. It has been a live subject in the rubber industry for many years. Many investigations and experimental studies have been made on rubber and the possibilities of making it synthetically and on the properties of the synthetic rubber itself ever since Faraday, the great English chemist and physicist, determined the composition of rubber in 1826. He found it to be a comparatively simple substance, namely a hydrocarbon with the formula $C_{10}H_{16}$.

This was by far the most important step that has ever been made in the synthesis of rubber, for this formula for rubber has withstood the severest tests and today forms the basis on which rubber is synthesized. Faraday showed the rubber men what rubber really is, and of course it is a much more simple task to synthesize a product when its exact composition is known than to attempt to make substances which are more or less similar to it and always fall far short of the goal due to lack of knowledge of the exact composition of the product. The chemistry of cotton, of wood, of paper has always been uncertain, due to the impossibility of writing an exact formula for cellulose. Whatever has been the success of synthetic rubber is mainly due to the availability of an accurate formula for the gum.

The history of synthetic rubber after Faraday simply became an attempt to discover that rubber would yield on being broken down by heating in sealed tubes and then to build up the gum again from these decomposition products. It was found that the principal product was isoprene, a member of the terseries of hydrocarbons. The substance turpentine was then found to be closely related to isoprene and in fact to rubber itself. Thus one of the early investigators allowed a bottle containing turpentine to stand in contact with a substance whose nature he did not know at the time, but which must have been metallic sodium or sodamide. He was surprised to find after some time that the turpentine had turned into a gummy substance which had some of the properties of rubber. It is the irony of research that he then spent the rest of his life trying in vain to discover what happened.

Both British and German chemists have done a great deal of work on synthetic rubber. Strange and Graham started exhaustive researches in 1909, patents were taken out and an intensive campaign was planned and undertaken which finally led to the development of butadiene rubber; that is, a rubber which is synthesized from the hydrocarbon, butadiene. The history of synthetic rubber also contains some very remarkable examples of coincidence in research. The same results were obtained both in various laboratories in England and in Germany. Patent suits were inevitable and even today it is not just clear to whom credit should be given for the first developments in synthesizing rubber. While considerable experimentation was carried out in England on this problem, English capitalists and business men were not favorably inclined toward synthetic rubber ventures and hence the manufacture of synthetic rubber on a commercial scale has not progressed very far at all in England up to the present time.

Synthetic rubber met with more success both in Germany and Russia where its manufacture was carried out on a technical scale. The shortage of rubber during the war was a very pertinent factor in the development of synthetic rubber in Germany, and fairly large quantities were manufactured. However it was found that synthetic rubber, as it was made in those days and in fact as made today, could not be used in place of soft rubber but only in place of hard rubber. The battery jars in submarines and other parts of machines and equipment of military nature were manufactured from synthetic hard rubber and the results appeared to be satisfactory.



One of the various native methods of smoking rubber. Sketched from photograph)

We may just say a word about the history of synthetic rubber in this country. The first time that American chemists say synthetic rubber was when the German chemist, Duisberg, exhibited samples of it at the meetings of the Eighth International Congress of Applied Chemistry which was held in this country. Since then, and particularly during the war, the interest in synthetic rubber has lagged in this country, but recently, and due to the rise in price of natural rubber within recent years, as has been explained above, American chemists have become rather strongly interested in the possibility of synthesizing rubber by a commercial process. Today it is safe to say that many chemists are working on this problem, but what the future holds for it cannot be foretold any more accurately than one can tell what the result of any research will be.

Methods of Synthesizing

We have said much about synthesizing rubber and nothing at all as to how it is done. It will be interesting briefly to review the various processes that have been recommended and used for this purpose. The essential condition in any synthesis is to have available a plentiful supply of the starting material. If that substance is rare or high-priced or hard to get, there is no use in breaking one's head over the details of a synthesis dependent on it. It stands to reason that such a process can never be worked on a commercial scale. Thus the first condition in the synthesis of rubber was to find the parent hydrocarbon, that is, the starting substance from which synthetic rubber could be prepared. The second step was to synthesize the rubber from this hydrocarbon. This process is called polymerization, for the reason that the molecules of the original substance are made to aggregate together to form the larger and heavier rubber molecule.

Three starting substances have been suggested and used in the synthesis of rubber. These have no common names but must be called by their chemical names, isoprene, methylisoprene and butadiene. They are all hydrocarbons.

Isoprene is obtained by the destructive distillation of rubber and of turpentine as well, and it was immediately suggested that turpentine was a suitable raw material for making synthetic rubber. This substance has actually been prepared from turpentine, but the latter product is self-evidently not a suitable raw material on which a commercial synthetic process can be based. It is too high in price. However, isoprene can be obtained from the hydrocarbons that are contained in petroleum, which is a much cheaper and more plentiful raw material than turpentine. But even in this case, as the automotive engineer will agree, the petroleum industry likely is in no position to supply a constant yearly demand of hundreds of thousands of tons of petroleum hydrocarbons for conversion into synthetic rubber, if a commercial industry were really developed. It is also possible to prepare isoprene from starch which is possessed of all the essential characteristics of a starting substance for this synthesis.

On the other hand, methylisoprene is a substance that can be used to greater advantage as a starting point in the synthesis of rubber. Plentiful supplies of this substance can be had, due to the reason that it can be manufactured from coal, or rather from acetone which is derived from coal through cyanamid. The raw material in this case is plentiful and fulfills all the requirements.

Butadiene, the third substance, is a gas at ordinary temperatures and pressures. It can be obtained from the products that result from the cracking of petroleum. It can also be prepared from alcohol (that is, ethyl alcohol) and acetaldehyde.

The difficulties of making synthetic rubber must now be apparent to the reader for it is not only necessary to synthesize the raw material but also to prepare the latter itself. In fact the latter problem often presents more difficulties than the former. Nevertheless, rubber has been synthesized and while the process is not yet a commercial success and the use of synthetic rubber has not yet become extensive and may never become so, the work of all these investigators has been of considerable value in other ways, not only to the rubber industry but to other industries as well.

It has been stated that the technical details of the synthesis of rubber have been well worked out. This is true, but the product that is obtained, although chemically like natural rubber, does not act like the same product. If synthetic rubber is really to take the place of natural rubber, it must first possess the same qualities and good properties of the average natural rubber; in the second place it must be at least as uniform in composition as natural rubber; and, third, a point discussed previously, it must be made at a price that can compete with natural rubber.

Synthetic rubber is not the same as natural rubber. Why this is so is a much mooted question but it is a fact that the good properties of natural rubber, which is the prime reason for the remarkable development of this substance, are lacking or present only in lesser degree in synthetic rubber. It must be remembered that natural rubber occurs as globules of gum, in colloidal solution, in latex, the sap of the rubber tree, mixed with proteins and resins. It has been very clearly determined that these proteins and resins are most important in making it possible to obtain a vulcanizate of the proper qualities. Synthetic rubber does not contain these resins and proteins and hence this is probably the reason why it does not vulcanize as well as natural rubber.

Plasticity is Lacking

The plasticity of the crude rubber, and the latent properties of high abrasive resistance and elasticity, which are developed by vulcanization, are the principal characteristics of rubber. Synthetic rubber does not possess these properties to the same degree as natural rubber. It cannot be worked as well as natural rubber due to its lesser plasticity.

The chemist has of course a way of getting around difficulties and it is not impossible that these difficulties may be overcome, but it must be pointed out that they are by no means simple obstacles. Some good work has been done along these lines in the development of what are known as elasticators, substances which when added to the synthetic rubber improve its qualities, but much still remains to be done.

It has also been claimed that it will be a difficult matter to manufacture synthetic rubber of uniform quality due to the difficulty of controlling the polymerization of the isoprene and the like. This would of course give a product of varying quality but it does not appear so troublesome a detail to solve as the improvement of properties of the vulcanized product.

Just Among Ourselves

Would Longer Discounts Help the Dealers?

PLENTY of talk about dealer discounts going around just about this time. Everybody knows that a majority of dealers have had a hard time making ends meet in the last year or so, and a desire on their part for longer discounts is more or less natural. Whether or not the dealer's problem would be made any easier by such a move, however, is at least problematical. We talked with one important factory executive during the New York show who previously has had a long experience as a dealer and distributor and who has a sympathy with the retailer's point of view far above the average. He said that after all, he couldn't for the life of him find it possible to justify larger dealer discounts so long as dealers already were giving away part of that discount which they have. There are some dealers who feel the same way about it, as a matter of fact. It does seem to us that longer discounts would not strike very close to any fundamental remedy for the problems which confront the manufacturer and dealer today.

* * *

A Dealer Dinner That Hit the Bull's-Eye

MUCH has been written about new standards in motor car values, but it remained for Graham-Paige to set a new standard in automobile show dealer luncheons. The New York gathering held by the Graham brothers during show week gave the banquet-hardened conductor of this page the greatest thrill he has had in years. From beginning to end, the meeting was carried out in a single psychological tone; it had life, vigor and color, at the same time preserving a marked atmosphere of dignity, stability, power. We have talked quite a little now and then about the need for what might be called better stage-management in automotive meetings of various kinds. We never knew definitely just exactly and specifically what it was that seemed to be needed; suddenly about the middle of the Graham-Paige luncheon it dawned on us that this was "IT." A 20th century, progressive, modern business meeting had been delicately, forcefully and powerfully dramatized. Someone had done for a dealer luncheon everything that Max Reinhardt had done for the theatre. We were attending a moving business drama rather than any mere dealer luncheon.

* * *

Everything in Harmony

IT wasn't just that public figures like Gene Tunney and Knute Rockne made talks; nor that the decorations and lighting effects were pleasing; nor that a special Paige-Graham March had been written by Arthur Pryor and phonograph records of it were distributed afterwards; nor that each of the Graham brothers talked briefly and effectively; nor that the whole thing ran off like clockwork. It wasn't any of these—yet it was all of them. The meeting was a complete unit in every way, symbolizing and illustrating the idea of unity of purpose which was stressed by the speakers. The achievement of this meeting—as near as we know how to express its effect—was the creation of an abstract mental entity in the minds of 1200 men by means of a nice coordination and presentation of a number of concrete events, effective lighting and decorations and coordinated talks. Everything from the hangings on the walls to the ideas expressed in the individual talks was in harmony with an obviously predetermined purpose. It seems to us to have been demonstrated that modern business—its ideas as well as its ideals—can successfully and effectively be dramatized.

* * *

Pertinent Facts for the Motorist

A LITTLE pamphlet issued by the N.A.C.C., listing facts pertinent to show time, informs us among other things that if Central Park were a lake of gasoline 15 feet deep we would drain it in one year. That's nothing—if it were a lake of synthetic gin we probably would drain it in a week. The pamphlet also says that the automobilist makes his own time-table — which would be true enough if it weren't for other automobilists. And then, too, the pamphlet urges that it is our duty to insist that our chauffeur obey the traffic regulations; it neglects to tell us how to get rich enough to afford a chauffeur, however, which is a vital omission. All of which is neither here nor there, as the pamphlet contains a lot of good, sound, constructive material about the automobile and its place in our modern social and economic life. Long may its epigrams circulate.—N. G. S.

States Again Urged *to Go Slow* With Compulsory Insurance Laws

Motor Vehicle Conference Committee still thinks more data should be obtained on subject. Views also given on motor vehicle taxation and regulation.

THE Motor Vehicle Conference Committee has recently completed digests of certain phases of state motor vehicle laws and has published a number of booklets presenting these digests and suggestions, recommendations and policies of the Committee in connection with them. There are four general subjects covered: (1) Special taxation of motor vehicles; (2) regulation of common carrier business; (3) restrictions on motor vehicle sizes, weights and speeds; and (4) liability insurance.

On the last subject the Committee sees no reason for changing its attitude of last year in recommending that more experience must be obtained from states where various forms of compulsory liability insurance are in force and to acquire more data relative to the need for such legislation before compulsory insurance measures should be enacted in other states.

More Experience Needed

Massachusetts is the only state in which all owners of privately operated motor vehicles are required to carry liability insurance. This measure became effective only on Jan. 1, 1927, so that hardly enough time has elapsed to determine whether it has had the effects sought, namely, to provide monetary compensation for all injuries caused by motor vehicles and to prevent accidents.

In five other New England States, modified forms of compulsory liability insurance have been enacted in which owners must take out insurance only when certain contingencies have arisen. In only one of these states—Connecticut—has the law been active more than a few months, so it is still uncertain what effect they will have upon the accident rate.

The Committee emphasizes the point that compulsory insurance laws now in force do not guarantee compensation to a person injured by a motor vehicle. Unless settlement can be made outside of court, the injured person must still go through all the legal tangles of proving his claim. All the insurance act promises is that if the injured person is given a judgment against a motor vehicle owner it will be paid, but it in no way makes it easier for him to prosecute his claim successfully.

Without attempting to minimize the importance of the motor vehicle accident problem, the Committee believes that until more testimony is available as to the effectiveness of compulsory liability insurance as an accident deterrent and as to the present amount of uncompensated losses, the motor vehicle owners of the country should not be saddled with a great expense for a service of doubtful value.

In the matter of state regulation of motor vehicle common carrier business the Committee reports that there are now 44 states which regulate passenger carriers to a rather complete degree; 33 regulate property carriers, while in two other states the Public Utilities Commissions hold that they already have the power to regulate motor vehicle common carriers but so far have not seen fit to exercise it.

State regulation is confined to intrastate activities following a Supreme Court decision that a state has no jurisdiction over operations which cross the state line. The Committee offers suggestions which it believes should be embodied in laws drafted to regulate common carriers. These suggestions are similar to those offered before and comprise six main subjects:

1. Control over intrastate transportation should be exclusively in the hands of a state agency.
2. Existing regulatory commissions or bodies should be utilized.
3. Before being permitted to operate, an owner should receive a certificate of Public Convenience and Necessity and should take out liability insurance.
4. The regulatory bodies should be vested with the same powers they exercise in controlling other forms of public utilities.
5. Taxes on motor vehicle common carriers should consist of those imposed upon all motor vehicles in that state and proper equitable franchise rights, provided that if the latter are imposed, an amount equivalent to those paid under the first item should be deducted.
6. Steam railroads, trolleys, shipping companies and other public utilities should be permitted to acquire, own and operate motor vehicles in conjunction with their regular lines of business.

The total amount of taxes paid upon motor vehicles during 1927, partly estimated, was $725,555,812. This includes Federal taxes of over $60,000,000; state taxes of $525,000,000 and municipal taxes of $15,000,000. Personal property taxes of $125,000,000 make up the remainder of the sum paid into various official coffers by motor vehicle owners.

Maintenance Comes First

Adjustment of general and special motor vehicle taxation, the Committee believes, should be on the basis of use of motor funds for such highway improvements as do not constitute an unfair burden on the individual motorist. Within this limit funds received should be used for improvement of highways of general motor use and should be devoted first to maintenance cost. Surplus funds should be employed in paying part of all other costs of highways of general motor use or to defray all or part of the cost of bonds issued to expedite construction of desirable motor highways.

The state should be the sole taxing agency. Taxes should be simple in form and equitable in distribution.

No highway should be improved in excess of its earning capacity. All money raised by motor vehicle taxation should be placed in the care of and expended by the State Highway Department. Cost of building and maintaining highways should be distributed equitably among the following in relation to the benefits derived: Society in general; definite groups of society; property served; road users.

The above suggestions are some of those presented in the Committee's list of sound and equitable principles to control taxation for motor vehicles. Following them is a summary, by states, of the various taxes and fees now imposed upon motor vehicles.

In the fourth booklet, on state restrictions on motor vehicle sizes, weights and speeds, the Committee presents a summary of present restrictions imposed by the various states and also suggests specific recommendations for such restrictions which are generally identical with those made public last year.

German "Facts and Figures"

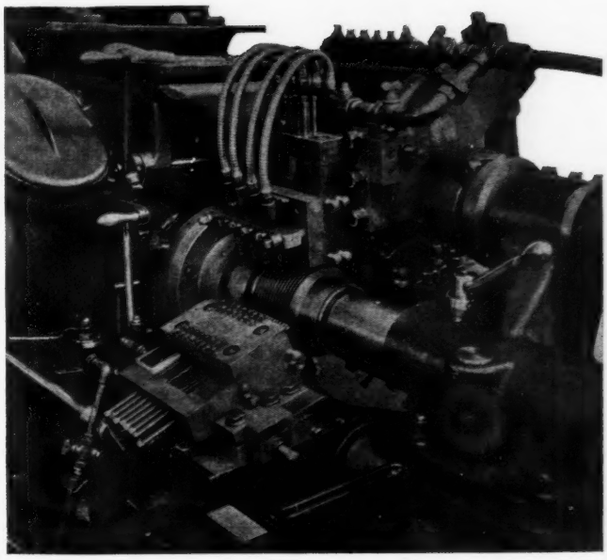
THE German Automobile Manufacturers Association (Reichsverband der Automobil-Industrie E.V., Berlin W-8, Unter den Linden 12/13) has issued a Facts and Figures of the Automobile Industry (Tatsachen und Zahlen aus der Kraftfahrzeug-Industrie). It contains a considerable amount of well-arranged statistical material, including production figures of the German automobile industry and of the German tire industry, automobile registrations in Germany by districts and according to type and power, tire consumption of the automobile industry, fuel and oil consumption of automobiles, number of bicycles in Germany, number of draft animals, world production of automobiles, world registration of passenger and commercial vehicles, German export trade in motor vehicles, German tariff duties on automobiles, automobile taxes in Germany and other countries, tax horse power formula in different countries, and average life of cars.

Although the book under review is for the year 1927, the statistics regarding the Germany industry are only for 1925, and it is to be hoped that in future editions it will be found possible to give the data for the year previous to that of publication. In 1925 the German motor car industry employed 86,642 persons, purchased raw materials and semi-manufactured articles to the value of 383,676,000 marks and paid wages and salaries to the amount of 178,180,000 marks. During the same year the industry produced 48,783 motorcycles, 38,988 passenger automobiles, 9364 delivery wagons and trucks, 7142 special vehicles (such as motor fire trucks) and 13,591 complete chassis.

Machining Cooling Fins

AN interesting machining operation has recently been developed by a manufacturer of air-cooled airplane engines. The new method completely machines the cooling fin on the outside of a cylinder from the solid in one operation and in eight and a half minutes, which is about three times as fast as any previous method employed.

The machine used is a Fay automatic lathe, made by Jones & Lamson, which is fitted with a front tool carriage and two back arms. The front carriage is equipped with parting tools while the back arms are equipped with facing tools, one set for facing the right hand and the other set for facing the left hand faces of the tapered fins.



Fay automatic lathe set up for machining airplane cylinder cooling fins showing the two back bars carrying facing tools

In operation the tools on the two back arms follow directly behind those on the front carriage and overtake them at the end of the operation, finishing the radii in the bottom of the grooves between the fins.

The taper movement is given to the back bars by a ring cam on the bar which moves the bars endwise as they are fed into the work. This operation constitutes the first time that the upper back bar has been used on a Fay lathe and, in connection with an auxiliary lower bar which may also be used, provides facilities for cutting simultaneously with four different sets of tools.

Pullmore Industrial Clutch

THE ROCKFORD DRILLING MACHINE CO., Rockford, Ill., has brought out the Pullmore industrial clutch, a new product which is compact, easy to operate and has a high work factor. The clutch is of the multiple-disk type and is made in six standard sizes ranging from 2 to 25 hp. at 500 r.p.m., and from ⅞ to 2¼ in. shaft diameter.

Either single or double types are available and they are furnished to run dry or in oil. The work factor employed is 16, which means that any clutch will pull, without slipping, 16 times its rated capacity.

To pull the rated capacities only a very light pressure is required with very small throw. Adjustments are easily made by lifting a flat spring and turning a notched collar. The clutch is made entirely of steel, hardened and ground, and is very compact.

AT a recent meeting of the Brennkrafttechnische Gesellshaft (Society for Fuel Power Engineering), Dr. Bronn of the Rombach Steel Works, referred to the use of methane as an automobile fuel. Methane is obtained in large quantities as a by-product in the production of nitrogen from coke oven gas. There are no material difficulties connected with its application as motor fuel.

Use *of* Welded Tubing Takes "*Whip*" Out of *Propeller* Shafts

Problem of producing perfectly balanced shafts is solved by interesting production processes developed by Spicer Co. Tube is automatically welded to joint parts.

By K. W. Stillman

IN its attempts to provide propeller shaft assemblies that should be free from unpleasant and dangerous vibration at high speed, the Spicer Mfg. Co. has followed the plan of making each unit of the shaft assembly a part balanced by itself. This was relatively easy to accomplish with the joint parts, which could be machined all over, but a real difficulty was experienced in trying to provide a perfectly balanced shaft.

The only material available for shafts in 1924, when the company began its experiments, was seamless steel tubing which, as is well known, is produced by drawing a pierced billet of steel over a floating mandrel. Variation in pulling strain, in the structure of the steel being drawn, and many other causes result in more or less uneven walls for such tubes, in spite of very careful control of manufacturing operations.

In 1924, the very best seamless tubing possible to obtain was purchased with the provision that variations in wall thickness up to 8 per cent of the total might be expected. While this represented an excellent result in seamless tubing manufacture, it was believed that something better might be developed for propeller shaft work. In a 2 in. tube with 0.095 in. wall, an 8 per cent variation would mean that the wall on one side of the tube might be 0.087 in. thick and .103 in. on the other. In the average length of shaft this variation would result in an unbalanced moment of about 4 oz.-in.

With the cooperation of the Mohegan Tube Co., of Brooklyn, a method of making a welded tube from strip steel was finally developed and has been used with success for three years, and propeller shafts of welded steel have been installed on about one million automobiles.

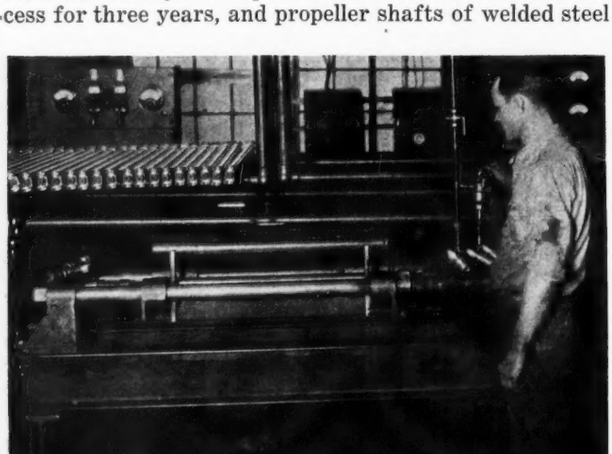


Fig. 1. Hydraulic press employed to force propeller shaft tubes over pilots on joint fittings

In the production of welded tubes, a billet of steel, of the proper constitution to provide the necessary characteristics, is first passed through strongly built flat rolls until it is about twice its final gage thickness. Then it is annealed, pickled and reduced to gage by cold rolling mills which permit very accurate control of sheet thickness and physical properties.

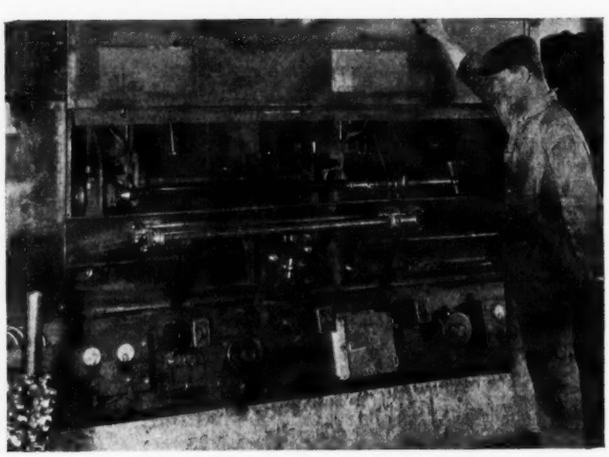


Fig. 2. Automatic welding machine which arc welds both joints to the tube simultaneously

Finished strips are wound into rolls which are carefully wrapped to protect them *from injury* until they are placed in the tube making machine. This is a very unusual machine which receives strip steel in rolls at one end and turns out at the other end finished tubes cut to length. It was designed and built by the Mohegan Tube Co.

The strip steel first passes through a series of forming rolls which, step by step, change it into a circular form and size it properly. As soon as it receives the proper shape it is fed through a device which brings the upturned edges of the strip opposite one another and at a uniform distance apart.

Immediately afterward the rolled strip passes through a continuous butt welding operation which securely welds the edges together. The edges of the strip are forced together under pressure and a heavy electric current passing across the electrodes through the steel fuses the edges together and upsets them to a considerable extent.

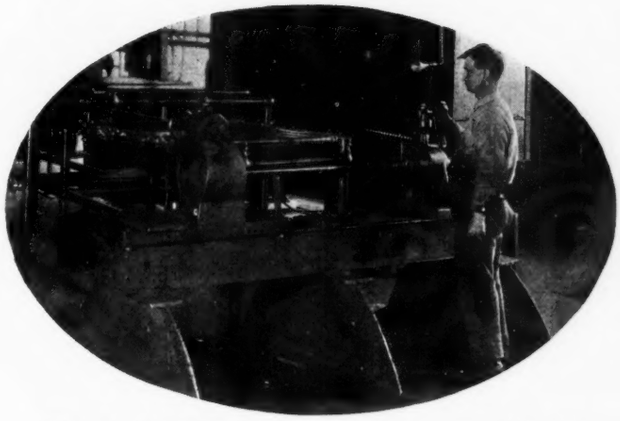


Fig. 3. Machine for torque testing assembled propeller shafts

Directly after leaving the welding station, and while the metal surrounding the weld is still hot, the tube passes through a device which flattens out the upset and returns the tube to its proper shape. This particular job is performed so that it is quite impossible to tell by feel alone on what part of the tube the weld has been made. Only the discoloration of the metal indicates its location.

Following this operation the tube passes through another series of rollers which finish-size and shape it so it will be accurate in all its dimensions. Cutting off is done by means of a flying saw similar to that used in steel mills. The saw, of the rotating type, is mounted on a movable carriage through which the finished tube passes.

Testing of the finished tubes was considered a very important item, since a slight flaw in the weld might easily yield under the strains imposed upon the tube in operation. Regular torque tests were given but they were not considered sufficient to test the welds properly. After some experimentation Spicer developed a hydraulic testing method which has given excellent results.

Pressure Tests are Made

A series of tests were run on various sized tubes to discover the maximum amount of pressure they could withstand, and service tests were made at pressures just below these. For example, one tube may be tested at 4500 lb. p. sq. in. internal pressure, at which it must show no indications of weakness, but if the pressure were raised to 5000 the tube would swell up like a balloon. Such tests on every length of tube have eliminated failures from defective welds and also, of course, have detected weak spots in the metal.

The next problem was to devise a method of fastening the tubes to the joint fittings in such a way that all units, which are in balance themselves, will also balance in the assembly. This is done by placing the tube over a pilot, which is a part of the joint fittings, and arc-welding it in place.

This method has been very successful, due mainly to the very close limits maintained on size of the tube and wall thickness. Fig. 1 shows the hydraulic press used to force the tubes over the pilots on the joint fittings.

The welding operation is performed on both ends of the tube simultaneously and is entirely automatic, so that the personal element has been eliminated. The assembled shaft is placed on centers in a machine such as that shown in Fig. 2. General Electric automatic arc welding heads are attached in the proper positions above the points of weld on the tube.

Machine Inclosed

The welding machine is inclosed so that light from the welding arcs will not bother the operator or others in the room, while a small door is provided in front for placing and removing work.

When the door is closed a starting button is pushed. This actuates cams which bring the ends of the welding wires in the proper positions above the points of weld, and a contact switch starts both arcs operating. The arc is carried through about 1.1 revolution and is then broken gradually by cam movements which pull the arc away from the work, at such a speed that deep craters in the work are avoided.

After the welding operation the completed shafts are carried through a series of tests to insure a proper finished product. The first of these is a torque test, illustrated in Fig. 3, in which the welds connecting the joints to the tube are tested to a point close to the elastic limit of the set and one which is many times the greatest stress which can be detained in service.

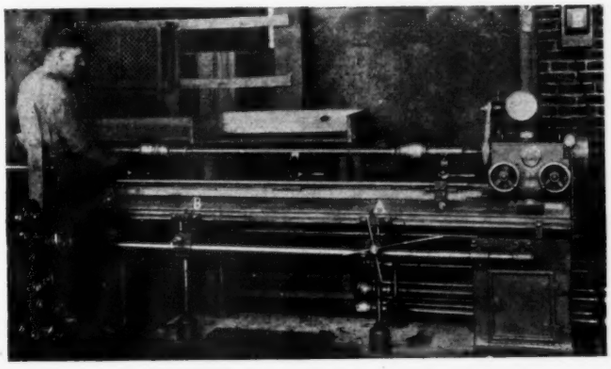


Fig. 4. Balancing propeller shaft assemblies on a Tinius Olsen balancing machine

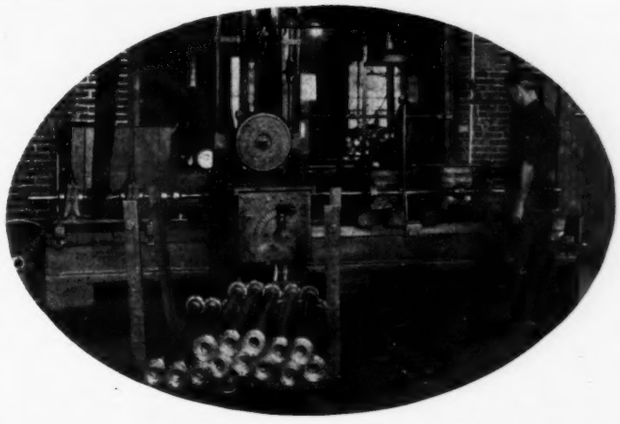


Fig. 5. High-speed shafts are given a whip test at speeds up to 5000 r.p.m.

The assembly is next straightened to close limits and sent to balancing machines which check and correct any unbalance in the set. An Olsen balancing machine used for this purpose is shown in Fig. 4.

Certain high-speed shafts are also given a whip test on the machine shown in Fig. 5, where they are run at speeds up to 5000 r.p.m. A final check is made for noise by running the assembly in a quiet room to determine if there is any looseness to cause noisy operation.

New *Long Clutch* is Mechanically Cushioned and *Damped*

Important feature of design is that frictional absorption characteristics can be varied in assembling process. Already adopted by several car manufacturers.

DURING the past two years or so it has become customary to provide the driven member of single - plate clutches with an insert of rubberized fabric, which has been found to eliminate troublesome noises in the transmission. These inserts accomplish their object, but there are some disadvantages connected with their use, and this gave rise to a desire for a mechanical equivalent. The points in favor of such a mechanical equivalent may be summarized as follows:

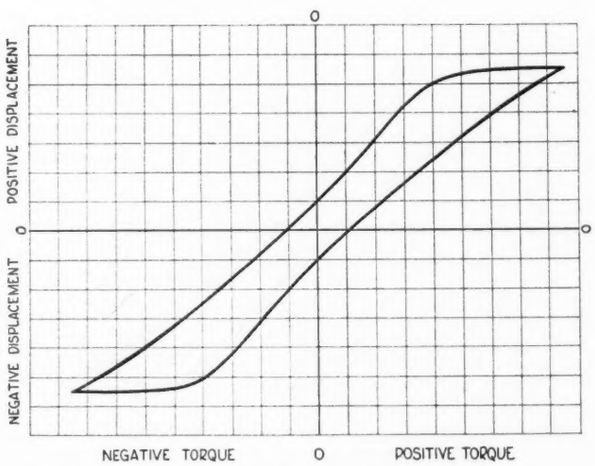
1. Rubber in the fabric disk may eventually be affected by the presence of oil and dirt in the clutch housing.
2. The relation of cushioning and damping actions is not readily variable in the rubber disk type.
3. A mechanical action is more desirable for engines developing high torque, as an additional safety factor, especially in view of (2).

After considerable experimental work on all kinds of powerplants, the Long Mfg. Co., Detroit, Mich., developed a mechanical action which appears to solve the problem and which has been adopted by a number of passenger car manufacturers for their 1928 models. This clutch was illustrated and described in connection with the new Chrysler "80" in our issue of Nov. 26, 1927.

Special Lining Developed

Considerable work had to be done in developing a type of fabric friction lining suitable for use in this torsional vibration damping mechanism; it was desirable to obtain a lining whose friction of rest and friction of motion were nearly equal, since otherwise it would be impossible to adjust a clutch under static conditions so that it would function as desired when there is relative motion between hub and plate. A molded composition lining was developed which has this characteristic.

A major feature in this design of clutch driven plate mounting is that frictional absorption characteristics can be varied in the assembling process. It is therefore possible to use the same design and size of clutch plate on cars having different torsional vibration characteristics by merely varying either the adjustment of the spring load on the friction lining, the weight of the cushion drive springs, or both. In practice this is done at the clutch plate of the Long Mfg. Co. Tests are first run on the cars in question to determine their vibration periods in relation to engine torque. Each clutch plate for this car is then set with the desired deflection, held to close limits, at the determined torque value. This is done by rigidly clamping the clutch hub and applying the measured torque load to the assembled clutch plate by means of an arrangement similar to a scale, measuring the difference in deflection under increasing and decreasing torque at this torque point by micrometer dial gages reading in thousandths of an inch. If necessary, adjustment is made by loosening or tightening nuts on the spring loaded bolts, all of the three nuts equally.



Hysteresis curve of Long friction-damped clutch plate. The area of the loop represents the energy converted into heat by friction during one complete period of vibration

In the double plate clutch as illustrated in the description of the Studebaker eight-cylinder car in our Jan. 7 issue, the arrangement is quite similar. The centers of the two driven plates are not moved relatively to the central driving plate between them, the engaging and disengaging action between the two being due to the spring leaf type of construction of the driven plates.

This design lends itself more readily than the normal two-plate or multiple-disk design to the application of the torsional vibration elimination mechanism. In the latter it would be necessary to have several of the mechanisms. In the Long double-plate clutch the spring cushioned drive is located between the drive plates. The mounting differs only in that, instead of bosses, as on the single plate type, a beam type mounting is used for the spring stops on the driven plates, the beam being fastened in one driven plate and floating in the other, the floating end being square. Of course, there is a slight sliding action between this end of the "beam" and the plate in question, during engagement and disengagement, but it is claimed that tests show the wear to be negligible.

The fact that it would be extremely difficult for the average service station to properly adjust a clutch plate

damper following disassembly for any reason, has led the Long Mfg. Co. to adopt a flat rate charge for complete driven plate assembly replacement, by which a new driven plate already adjusted is installed if for any reason a disassembly of this unit would otherwise be necessary, as for replacing the lining, etc. These clutch plate replacements are marketed through the dealer organization of the manufacturers of cars using this design of clutch.

While at the present time these clutches are used in passenger cars only, the Long Mfg. Co. is now ready to apply the mechanism also to commercial units, notably buses, in which the elimination of transmission noises is beginning to be an important problem.

It is quite probable, however, that the rubber clutch insert disk will be retained on some of the smaller passenger cars, since on these the variations in torque are not so pronounced, and the lower cost, of course, will be an influential factor in their retention.

Westinghouse Vacuum Brake Made in Three Sizes

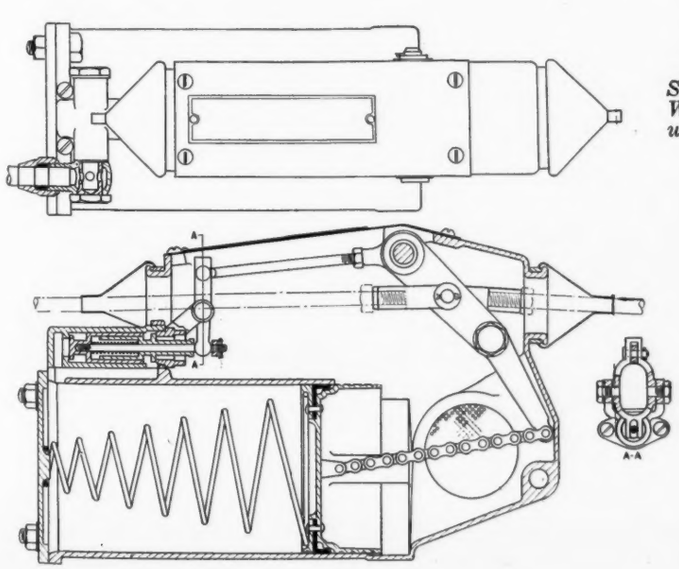
THE Westinghouse Air Brake Company, Automotive Brake Division, Pittsburgh, Pa., has placed on the market a power brake based on the vacuum principle. The company is American licensee under the Dewandre patents and the brake is similar in some respects to that described in *Automotive Industries* of March 25, 1926. A number of changes in design have been made, however, by the Westinghouse company, and the brake equipment will be turned out in three sizes, with brake cylinders of 4½, 5 and 6 in. diameter, for use on passenger cars, large passenger cars and light trucks, and heavier trucks up to 3-ton capacity. For trucks of more than 3 tons the company will build only air brake equipment.

Sectional views of the equipment as designed by Westinghouse are reproduced herewith. One of the improvements introduced consists in the provision of an air filter of pulled curled hair, the same as used with Westinghouse air brakes. This prevents the ingress of dust and dirt and consequent wear of working parts.

In the new design a straight pull is obtained from the pedal through the mechanism within the brake cylinder housing to the brake rod by means of offset clevises. Rubber boots are provided on both of the rods entering this housing, to keep out dirt. Instead of using metal packing rings, the Westinghouse company uses a leather cup on the aluminum alloy piston, this being packed with grease. This method of lubrication made superfluous the connection from the atmospheric valve of the brake cylinder to the engine crankcase for lubrication purposes, and this has been dispensed with.

As was pointed out in our previous description, about one-quarter of the brake operating effort is supplied by the operator and the rest is obtained from the vacuum in the manifold. Thus the braking effect is at all times directly proportional to the pedal pressure exerted by the operator. This brake appears as standard equipment on Chandler 1928 cars, as reported in our issue of Dec. 31.

The Westinghouse Air Brake Company also plans to sell this brake equipment through dealers and service stations for application to cars already in the hands of the public.



Sectional views of Westinghouse vacuum-type automobile brake

"Fleetarrow" Introduced

A NEW six-cylinder, 1½ to 2 ton fast delivery truck called the Fleetarrow has been announced by Pierce-Arrow. Standard wheelbase is 140 in., while two others—160 and 180 in.—are optional at extra cost.

The L-head, six-cylinder engine is 3½ by 5 in., and develops 70 hp. Three-speed transmission, full-floating, spiral bevel rear axle and four-wheel, internal mechanical brakes are employed. The front axle is a reverse Elliott type I-beam. The heat-treated pressed-steel frame is 7⅝ in. deep, with 4 in. flanges and is of 3/16 in. material.

Long semi-elliptic springs are used, 38 by 2 in. in front and 56 by 2¼ in. at the rear. Pneumatic tires are standard, 32 by 6 front and 34 by 7 rear or 32 by 6 dual.

Graham Road Builder

A TWO-TON road builder chassis with six-cylinder engine, four-speed transmission, three optional rear axle ratios and four-wheel Lockheed hydraulic brakes has been added to the Graham Brothers line. The 3¼ by 4½ in. engine is the same as that used in the two-ton standard model and is provided with electric starter and generator as standard equipment.

The unit transmission has a reduction in low gear of 6.5 to 1. The spiral bevel gear rear axle has a straddle mounted pinion and dual Timken roller bearings at the wheels. Steering is by cam and lever type gear. Pneumatic tires, 32 by 6 in. front and 34 by 7 in. rear, are standard. Wheelbase is 114 in. Rated speed is 35 m.p.h. Two standard dump bodies, gravity and hydraulic, are offered.

Harry Tipper

Teaching the "Curbstone Dealers" of India to Sell Automobiles

Organizing for sales of automotive products in foreign countries is difficult job owing to handicaps of distance and habits.

By Harry Tipper

General Sales Manager, General Motors Export

I HAVE been very much interested, since I entered the export business, in the fundamental similarity in merchandising requirements everywhere in the world, and also in the fundamental similarity in the habits of thinking about business all over the world.

The difference is more largely in degree than anything else. Consequently, the really important part of our work from an organization standpoint is in measuring the degrees of difference in the habit of thinking and in estimating the rate of progress that can be expected in changing over those degrees of habit until they represent about the normal we require in our business.

In the United States the habits of the dealer in the automotive business were created along with the business. This business was pretty nearly created out of the whole cloth, and the individuals who comprise it assembled themselves together from all sorts of places, and the habits grew with the business. But in the countries we are dealing with that is not the case. The habits of doing business are their old habits of business. They have simply transferred those habits over to the new product.

We must, therefore, consider that fundamental difference in the strategy of our work; we have to change habits that have been transferred to the sale of the new product and which threaten to resist the distribution of the product.

We have also to consider, in the organization work, the instrumentalities that we work with, and the weighing of the importance of those. I have been impressed with the fact that in the ordinary business correspondence in the United States we never have to begin a subject at the beginning, or end it at the end. The correspondence is always preceded by an assumption arising out of the common understanding of practice. You can always assume that the man knows a lot about what you are talking about, to begin with, and you do assume that intuitively in the correspondence. In the second place, it is preceded by interview and conference, and succeeded by interview and conference. It is added to by telephone conversation. So that, after all, your correspondence represents an interim memorandum of the high spots that you really covered in conference. Particularly is that true in sales work.

You cannot confer with your dealers abroad, you cannot telephone them, and you have not many mails. Therefore, it is necessary to begin at the beginning with correspondence, and to end at the end, and actually to lay down the full information in the correspondence. Otherwise the man who knows little of our practice, whose technique is small, who may be working in a country where there has been no mechanical labor required except the old-fashioned repairing of a solid wheel wagon, who must be taught from the very beginning what we require in service or in parts or in sales, who does not know what sales promotion means, and who may have heard only vaguely about advertising, may not understand.

We must give him clearly all the plans in each piece of correspondence. I have found it amazingly difficult to organize for that. I have found it an amazingly difficult thing to get men to sit down and actually say what is the beginning of a subject and what is the end, and cover

SPEAKING before the Overseas Club at a meeting during the week of the New York Show, Mr. Tipper gave a broad picture of the present status and problems of automobile exporting. He found that conditions were generally sound and the outlook promising, despite increased competition in the field.

He took occasion to comment extensively upon merchandising practices in foreign markets and these comments are given in part in the accompanying article.

all the ground between those two points, without assuming so much that the fellow at the other end has an awfully hard job trying to tackle it.

The same thing is true with the other instrumentalities. I don't think I should be wrong in saying that 85 per cent of the momentum of a domestic sales program many times comes from the meetings that the sales manager has with his staff and with at least his principal field men. The job we have in export is to take what is left, which may be 15 or 20 per cent, and make it work 100 per cent on the problem. I have found that requires a considerable rearrangement in the fundamental thinking of organization.

There are other weighings that enter into it. Information is very fragmentary, the area of judgment required is greater. You cannot be opportunistic, because if you try to meet the opportunity it is gone by before you can catch the fact that there was one. One sales manager in this country told me that he laid his plans for next month at his meeting of this month. That sort of thing is impossible in export. The whole strategy of sales planning and sales operation must be extended over a longer period of time, must carry a great deal more pioneer work, and must be at the same time so organized that, in the actual commitment of material and rearrangements of orders and inventory, you are never in any severe danger from an immediate economic change.

Furthermore, we have been accustomed in domestic sales work to depend to a very considerable extent upon personal impressions of our dealers and the amount of sales momentum that they can initiate. We cannot rely upon that in export. Therefore, the capacity to take the fragmentary statistics, the slight indices of economic change, the capacity to weigh those with an impartial knowledge of the atmosphere of the territory itself, translate them into forecasts of the business, and actual, desirable shipments into the territory, is a fundamentally important element in controlling the situation.

The degree of difference between the traders in India, for instance, and the traders in the United States in their general method is such that we will have to struggle with it or find ourselves limited by it. If we leave these traders to improve themselves, we will find that they are incapable of developing as rapidly as the market requires. The native dealer cannot accumulate money to increase his business on his present method of conducting it. If the business grows we must get more of the same kind of dealer.

Development Must be Speeded

So we must develop into practical efficiency a distribution system moving into better practices more rapidly than it is inclined to grow under ordinary circumstances. I would like to point out that this requires thorough knowledge as to what are the really essential things in a distribution system.

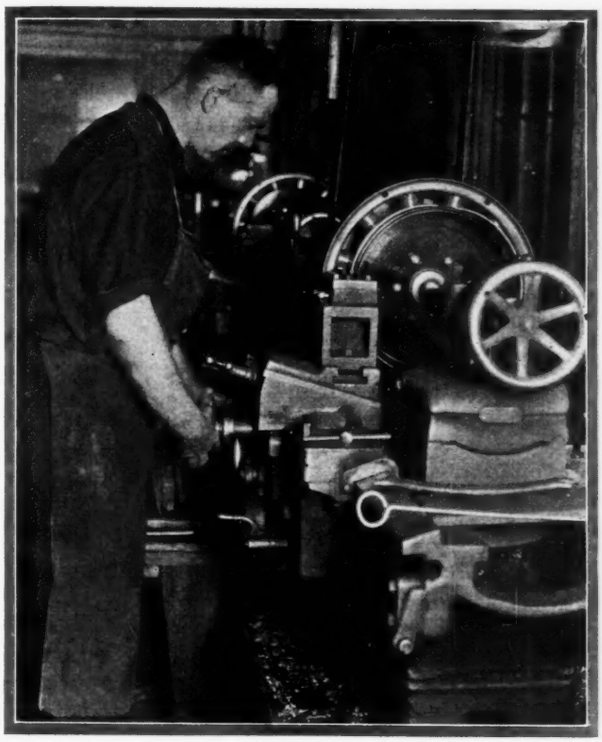
What is the first essential, for instance? A man brought up that interesting point to me not long ago in discussing a certain territory, where there are a large number of curbstone dealers, as we call them, without a place of doing business, but where we must encourage the best of these dealers to develop regular dealer businesses in the next five years, because we will need them in the growth of the business. The man asked me this question, "At what point would you start to develop a curbstone dealer into a real merchant?"

That is a very interesting and a very practical question. We cannot wait for those men to find out where to start. We must show the best of them how to start developing, and so we must know very definitely what we need in a distribution system; what we need, first, and how it should be stepped along. That means an entirely new conception of dealer development and sales promotion work, and a very unusual definition of it. And I am very definitely of the opinion that the movement of automobiles around the world is not at present developing a distribution system rapidly enough to take care of the future load, and that we must intelligently aid in its growth.

Especially is this true as the export position in the automotive field in the future shows a market of immense potentiality, varying considerably in its digestive rate or speed of growth, one territory from the other, in which the future forecast of the market depends more upon the digestive rate than it does upon the potential size. Because the potential size is large enough that we don't need to consider its limitations at present.

Centering Brake Drums

IT is always a difficult problem to assemble wheels so that brake drums are accurately centered. Slight variations in bolt hole locations or hub machining will throw the drum out of center sufficiently to make brake application uneven around the drum circumference. To overcome this difficulty, the Pierce-Arrow Motor Car Co. reserves final machining of brake drums until after assembly on the wheels. The final operations are carried out on a standard lathe. The wheel assembly is mounted on a taper nut arbor placed between lathe centers and the final cut is taken, after which the drums are polished with emery cloth on the same operation. Limits by this means are held to .005 in. in out-of-round.



Machining brake drums after assembly on the wheels at Pierce-Arrow plant

New B-K Vacuum *Brake* Adjustable *for* Any Road Condition

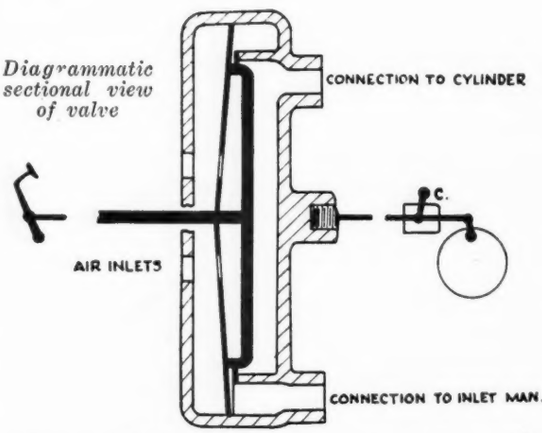
Driver able to regulate braking pressure for dry, wet or icy streets. Piston is operated by vacuum.

By P. M. Heldt

A NEW vacuum servo mechanism specially designed for the operation of four-wheel brakes has been developed by the Bragg-Kliesrath Corp. of Long Island City, N. Y., which has been manufacturing the B-K booster brake for more than three years.

This new mechanism comprises a cylinder with piston adapted to be operated by the vacuum in the inlet manifold, and a valve for controlling communication between the manifold and the vacuum cylinder. In addition there is a vacuum control device to be mounted on the dash, which furnishes an adjustment by means of which the maximum force of power application of the brakes can be limited accurately in accordance with the state of the roads.

Diagrammatic sectional view of valve



Referring to the accompanying illustrations, the vacuum cylinder is carried on two trunnion levers extending down from a cross shaft forming part of the linkage for the rear-wheel brakes. The cylinder, therefore, is not fixed to the car frame, but is movable, and its motion directly applies or releases the rear-wheel brakes. It will be seen that two of the three levers on the cross-shaft have links connected to them that connect to levers on the brake shafts mounted on the rear axle. Application of the front-wheel brakes is effected by connection to the piston in the brake cylinder.

An important part of the mechanism is the valve, of which an outside view and a diagrammatic sectional view are shown herewith. This valve has a two-part housing, and a steel diaphragm is fastened between the parts. This diaphragm divides the inside of the housing into two compartments, but the diaphragm has holes in it through which the two communicate. The compartment on one side of the diaphragm is again divided into two spaces by an annular wall cast in this part of the housing—a central space communicating with the vacuum cylinder, and an annular space surrounding the former and communicating with the inlet manifold.

Within the central space there is located a mushroom-shaped valve head, the stem of which connects directly to the brake pedal. Under normal conditions—that is, when the brake is "off"—the valve head is held out of contact with the diaphragm by the brake retracting spring. Under these conditions the vacuum cylinder is in communication with the atmosphere through the control valve (through the holes in the diaphragm and in the valve housing).

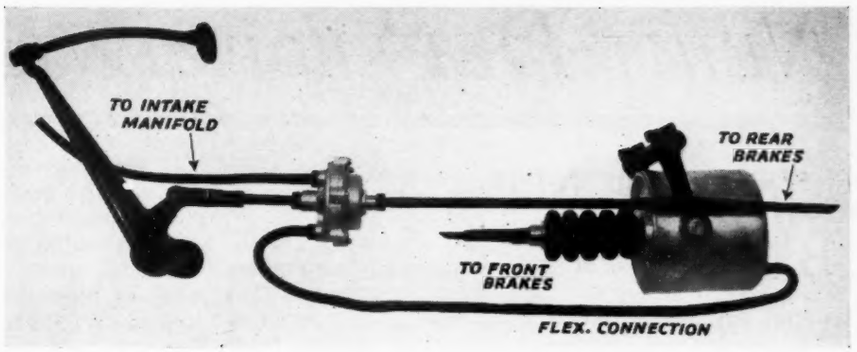
Now assume that the driver presses on the pedal to apply the brakes. The first effect is to bring the valve head up against the diaphragm, thereby shutting off communication between the brake cylinder and the atmosphere. Continued motion of the brake pedal causes the valve head to lift the diaphragm from its seat, thereby establishing communication between the inlet manifold and the brake cylinder. Air is then drawn from the cylinder into the manifold, and the resulting excess pressure of the atmosphere against the outside surfaces of the piston and the cylinder head causes the piston to move further back into the cylinder, toward the head. Actually, since action and reaction are always equal and opposite in direction, both the cylinder and the piston will move, the former applying the rear brakes and the latter the front ones.

The piston is directly connected through the linkage shown in the "hook-up" diagram with the front brakes, and the force due to the differential gaseous pressure on the brake cylinder piston is transmitted in toto to the front brakes. On the other hand, the reaction to the pressure, which is taken up by the cylinder head, is transmitted to the rear brakes. This, however, is not the only force applied to the rear brakes. By reference to the drawings it will be noticed that the control valve floats on the linkage, having no fixed support on the chassis frame.

Recommended hook-up for brakes

Therefore, when the driver presses with his foot on the brake pedal, this pressure, after modification through the pedal leverage, is transmitted through the valve to the rear brake linkage, adding to the force derived from the brake cylinder.

One of the desirable characteristics of all servo or power brakes, that of some degree of proportionality between the pedal pressure and the force of brake application, is realized in the B-K safety servo brake, though the principle on which it is based is not readily understood and calls for some explanation. Assume that the driver presses the pedal forward to a certain definite point and stops there. Then, communication between the inlet manifold and the brake cylinder being established, air will be drawn out of the brake cylinder and the cylinder set in motion to apply the rear brakes. But it has been explained that the valve chamber incorporated directly in the linkage of the rear brakes, and when these brakes go on, the valve housing moves. It moves in such a direction that the seat of the diaphragm approaches the diaphragm, with the result that when the tension in the linkage of the rear brakes has reached a certain value—depending on the point to which the pedal was moved—the seat comes up to the diaphragm and shuts off communication between the inlet manifold and the brake cylinder, the vacuum being held in the cylinder at the value reached at that moment. Consequently, to each position of the brake pedal corresponds a definite degree of vacuum in the brake cylinder and a definite tension in the linkage of the rear wheel brakes. The motion of the brake pedal, moreover, is proportional to the pressure exerted on the pedal.



Photographic view of brake cylinder, valve and connections

Front Brake Effect Limited

When the operator moves the pedal so far that the diaphragm remains off the seat, the full vacuum of the inlet manifold is active in the brake cylinder, and the front-wheel brakes are then applied with the maximum force possible. The rear brakes are applied with a corresponding force, but it is possible to apply them with still greater force by pressing harder on the pedal. Any additional pressure on the pedal beyond that required to just hold the diaphragm from its seat will not add to the force of application of the front brakes, but it will add progressively to the force of application of the rear brakes, the pressure of the brake pedal being transmitted by means of stops in the valve not shown in the illustrations.

One of the advantages of this brake which is directly apparent is that it automatically proportions the force of brake application between the front and rear brakes. Wear of the brake linings is automatically compensated for by the piston moving further into the brake cylinder.

Another interesting feature of the brake is its automatic compensation for any leakage of the valve. If there should be leakage of air into the cylinder when the brakes are applied, sufficient to cause their release, the valve housing will automatically move into the position for which there is communication between the source of vacuum and the brake cylinder, thereby reapplying the brakes. On the contrary, should there be any leakage of air out of the cylinder (through the valve), causing the brakes to be applied more strongly, there is a tendency for the control valve to move into the released position, in which the valve establishes communication from the brake cylinder to the atmosphere, releasing the brakes. Thus the brake is balanced, as it were, for any position of the pedal and any degree of application.

The last item of the servo mechanism is the separate regulating device which goes on the dash and serves to regulate the limiting brake force available for different conditions of road surfaces such as dry, wet and icy. The indicator of this device on the instrument board has three sectors, a green one marked "Dry," an orange one marked "Wet," and a red one marked "Icy." By moving the lever on this indicator from one position to another, the degree of vacuum which can be reached in the brake cylinder is varied, the maximum vacuum corresponding to the dry and the minimum to the icy condition.

Particular virtues are claimed for the property of the servo by which the force of power application of the brakes is limited. As is well known, it would be very dangerous if the front wheels were locked by the brakes, as the driver would then lose all control over the car. In order to prevent this possibility, manufacturers usually arrange their brake linkage so that the front brakes are less strongly applied than the rear brakes. With the B-K safety servo the forces of application of front and rear brakes go up in direct proportion as pressure is applied to the brake pedal, up to a certain point; if the pressure on the pedal is still further increased, the force of application of the rear brakes only increases, (which compensate for increased load), that of the front brakes remaining constant.

The point at which the front wheel brake pressure stops increasing can be varied by means of an adjustment on the vacuum line (as described in the preceding paragraph) to suit different conditions of road surfaces —dry, wet and icy—so as to make it impossible for the front wheels to lock under any of these conditions.

A linkage is recommended by the Bragg-Kliesrath Corp. by which the "emergency lever" applies the front brakes alone and directly. Since the pedal operates the rear brakes directly, this gives two independent brake systems, which satisfies all State laws.

Manufacture of the regular B-K booster brake for vehicles with rear wheel brakes only is being continued.

AT the recent World's Automobile Congress in London it was decided to hold the next Congress in Rome in September, 1928. The London congress was attended by delegates from more than 50 countries and was held in the Savoy Hotel.

NEW DEVELOPMENTS—Automotive

"Standard" Milling Machines

BROWN & SHARPE MFG. CO., Providence, R. I., has a new line of "Standard" milling machines which include among their important features dual feed control from either the front or rear of the machine. This permits the operator to make feed changes from the front or rear—the latter being preferable when face milling, boring, etc.—all changes being made by the simple rotation of a single lever.

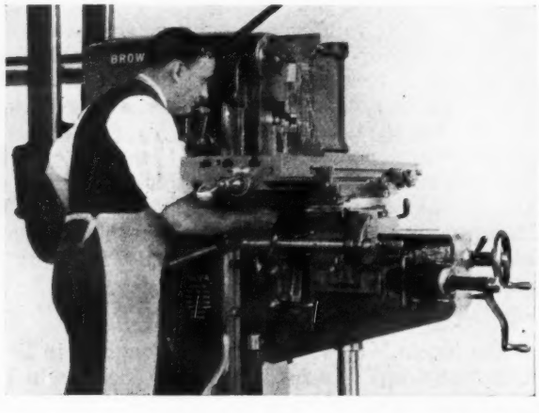
The feed in use at any time is shown on a direct reading dial directly above each of the two control levers and only that one feed is shown on the dial. All other control levers are easily reached from either the front or rear operating positions and all levers are arranged so that they are always thrown in the direction of the movement of the table.

Power fast travel control for all three directions is provided on all Standard milling machines, while the knee clamp lever is easily reached from front or rear operating positions.

One revolution in either direction of a single lever on the left side of the machine gives a change in spindle speed. A direct reading dial above the lever indicates the speed for which the machine is set. Two series of speeds are available, changes from one to the other being made by shifting the back gear lever. Spindle reverse is controlled by a small handle just below the speed change lever.

All units in the column and driving clutch are automatically lubricated with filtered oil and a gage indicates when the pump is working. The column mechanism is completely inclosed to prevent the entrance of foreign matter and the inside of the column is coated with enamel to prevent particles of grit in the casting from getting into the lubricant.

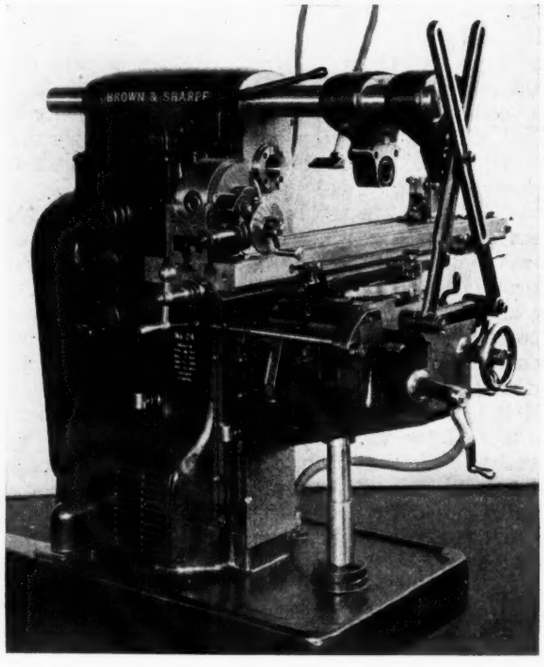
Knee mechanisms are lubricated by forced feed. The complete saddle mechanism and table bearings are oiled from a single well at the front. The cutter coolant system is designed to supply flood supply or a thin stream. It is a low pressure system and the simple pump, which is always immersed and stops when the spindle stops, requires no attention.



Showing how Standard machines are controlled from the rear position

Constructional details of the new machines include: Sliding gear feed and speed transmissions; dry multiple disk clutch, self-compensating for wear; all gear drive of heat-treated alloy steel gears; anti-friction bearings for feed, speed, power fast travel transmissions and also for main drive pulley; spindle runs in phosphor bronze bearings; one-piece knee screw completely guarded in all positions.

Standard milling machines are made in two sizes, plain and universal, designated as 2B and 3B, and 2A and 3A respectively. Size 2 machines have longitudinal feed of 28 in., traverse feed of 10 in., and vertical feed of 18 in. Corresponding figures for the larger machines are 34 in., 12 in. and 19 in.



New Brown & Sharpe Standard universal milling machine, showing levers and dials for rear control

Model C Oil Rectifier

A NEW oil rectifier, Model C, has been developed by Skinner Automotive Device Co., Inc., designed particularly for use with poppet valve engines and which will supplement their other oil rectifying system.

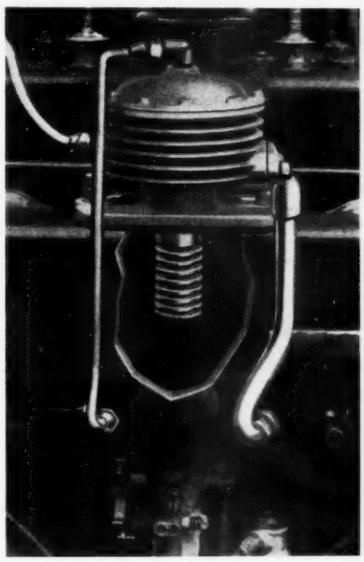
The new device takes oil for treatment from the oil pressure line in a manner similar to that employed with the usual oil filter. Upon reaching the rectifier the oil passes through a thermostatically-controlled valve upon its way to the distillation chamber. In this chamber the liquid impurities are vaporized and pass off into the intake manifold to be used for fuel while the refined oil returns by gravity to the crankcase.

The rectifier is mounted on the exhaust manifold and has a heat conducting element extending down into the manifold. This unit is constructed to provide a

Parts, Accessories and Production Tools

maximum of heating surface to bring the temperature up quickly when starting. Where the unit joins the rectifier, however, the area is restricted so that the amount of heat reaching the oil is limited during operation at high temperatures.

This combination of quick initial heating, prevention of overheating and the thermostatically-controlled valve to maintain a constant oil temperature in the distillation chamber are the features which the designers believe make this new development of value. Installation is said to be easy.



Part cut-away view of new Skinner oil rectifier showing installation on manifold and heat unit extending down into it

Gisholt 1L Turret Lathe

FOLLOWING the announcement in September of its new 2L turret lathe, Gisholt Machine Co., Madison, Wis., is now offering to the trade a smaller machine of the same general design called the 1L, for bar work up to 2½ in. and chucking work up to 12 in.

The headstock is of rectangular box design with walls carried well up above the spindle bearings, and the center distances of driveshaft, intermediate shaft and spindle are determined by jig-bored holes in the solid metal of the walls. The headstock cover is a flat plate carrying only the operating levers. The spindle bearings are of the same adjustable taper design as on other Gisholt turret lathes, except that tapered roller bearings have been substituted for anti-friction metal. The headstock driveshaft, intermediate shaft and reverse shaft are also carried on tapered roller bearings.

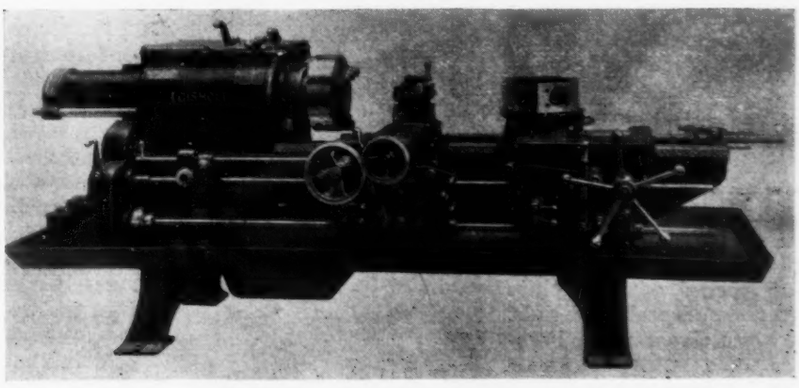
The single drive pulley runs 600 r.p.m., affording a high speed initial drive and a wide gear ratio through the hardened steel headstock gearing to the spindle. Twelve spindle speeds ranging from 20 to 486 r.p.m. are provided through sliding gears and positive jaw clutches mounted on splined shafts. The spindle control lever located just back of the spindle nose convenient to the operator's hand operates a multiple-disk clutch on the driveshaft for starting or reversing the spindle, and when placed in neutral engages a brake which instantly stops the spindle. The multiple-disk clutch is made of saw steel and phosphor bronze plates running in oil, but when necessary can be adjusted without opening the headstock.

From the headstock to the final drive of the carriages all power shafts are mounted on ball bearings. The upper of the two shafts along the front of the bed rotates at proper speed for feeding the aprons, while the lower shaft rotates at higher speed for the rapid traverses.

The full universal, full swing, two-carriage principle common to larger Gisholt turret lathes has been employed in the design. A fixed center turret is standard equipment and a cross feeding turret is optional. Eight independent reversible feeds are incorporated in each apron, with another complete range of eight feeds, each slightly coarser, available through a lever at the headstock end.

Longitudinal rapid traverses are provided for both carriages, with automatic stops at the extremes of travel. Rapid traverse is also provided for the in and out movement of the square turret tool post on the cross slide. By virtue of the many ball bearings used, the feed gears in the apron are speeded up for rapid traverse, and no separate traverse mechanism at the back of the bed or elsewhere is required, except the lower driveshaft. This construction permits not only rapid traverse to the side carriage, but also rapid traverse to the cross slide.

The square turret on the cross slide automatically indexes one-quarter turn as the clamping lever is released. The hollow hexagon turret is of thick section and is clamped to its base by a double bevel steel clamping ring operated by a powerful compound toggle. A tapered index pin seating in hardened bushings locates the turret holes central with the spindle but the strain of the cut is entirely taken by the bevel clamp ring. Automatic trips are provided for the longitudinal feeds



Front view of new Gisholt 1L lathe

of both carriages, and for the cross movement of both square turret and cross feeding turret.

The ways of the bed are covered with hardened steel plates of 75 Rockwell hardness, securely attached with heat-treated alloy steel taper head screws and ground in place. Each movement of the rapid traverse lever, whether forward or back, feeds a small amount of oil by pressure from a plunger in the apron through the under side of the carriage to the ways. Dirt and chips are excluded by felt and brass wipers, so that the carriages ride on a film of clean oil at all times.

The headstock gearing and clutches run in a bath of oil, a part of which is collected in a splash box, strained and carried to the spindle bearings. Feed train and traverse drive are lubricated with fresh oil from a Madison Kipp automatic lubricator, so that remote bearings which might otherwise be neglected are assured of a constant supply of oil. Each apron contains its own oil reservoir from which its gears are constantly lubricated by the splash system.

For electric drive, the motor may be mounted either on the headstock or on a special back plate, and connected by Allis-Chalmers Texrope, flat belt or silent chain. A 1200 r.p.m. motor of from 3 to 7½ hp., depending on the nature of the work, is recommended.

For bar work power-operated bar feed is provided consisting of a screw driven carrier coupled by a flat cone friction clutch to the headstock power. An automatic chuck with master collet and size pads is operated by the same lever as the bar feed. A 12-in. three-jaw universal chuck is standard equipment for chucking work, but air chucks or wrenchless chucks may be supplied. Taper attachment, leadscrew thread chasing attachment and a complete line of bar and chucking tools are accessory equipment.

The maximum swing is 17 in. over ways, 14 in. over side carriage and the maximum distance from face of hexagon turret to end of spindle nose is 45 in. The net weight of the machine without tools is 4900 lb.

Chanson Shock Absorber

A NEW shock absorber which is guaranteed against strap or spring breakage for the life of the car upon which it is fitted has been brought out by the Chanson Division, Illinois Iron & Bolt Co., Carpentersville, Ill.

The main feature of the device is the use of a double drum which provides for 21 in. of strap travel, and an 8 ft. spring which is capable of 6 ft. of travel. Since these are far more than any possible requirements over the roughest roads, strap and spring breakage are said to be eliminated.

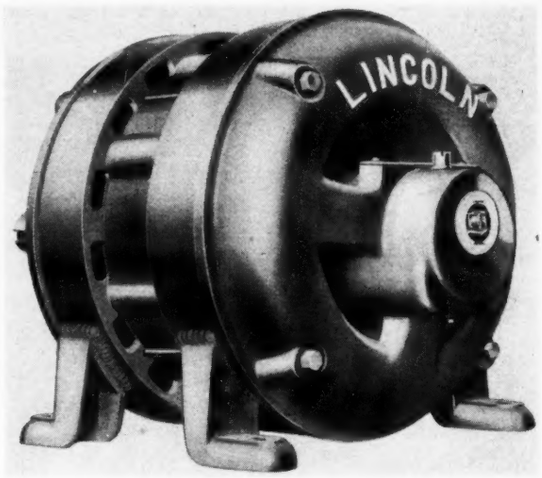
The strap is tested to 2700 lb. and has a load of from 90 to 100 lb. The spring is 8 ft. long and is inclosed in a separate housing, which in turn is inclosed in the regular housing packed with graphite grease and sealed airtight against dirt, mud and water. No oiling or greasing is necessary.

Chanson double-drum shock absorber

A stationary brass brake drum is said to eliminate squeaks and noises while strap wear is prevented by a full floating friction ring. A special fitting provided with each shock absorber permits them to be installed on all makes of cars with little trouble. Two sizes are provided, the larger selling for $30 per set of four and the smaller at $22.

"Switch-Start" Motor

A NEW "Switch Start" motor so designed that it can be started directly across the line without using compensators, resistances or other volting-reducing mechanisms has been introduced by the Lincoln Electric Co., Cleveland. This new motor is supplied in sizes from ½ to 30 hp., for either two or three-phase, 60-cycle current.



Lincoln Electric "Switch Start" motor

While securing low starting currents other characteristics such as power factor, maximum torque, temperature rise, etc., have not been sacrificed. Power factor from five to 10 points higher than the ordinary self-start motor is claimed while starting torques of from full load to 250 per cent full load are possible without exceeding N.E.L.A. starting current requirements.

New Yale Tractor

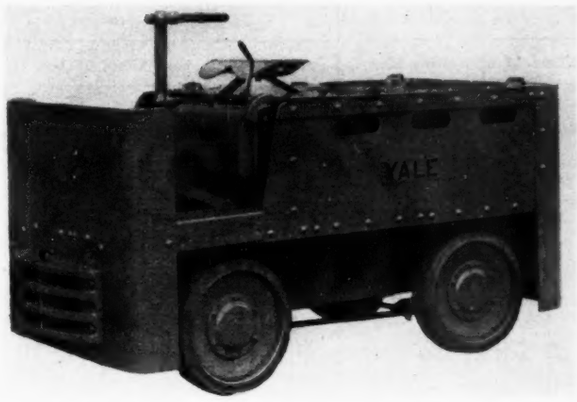
THE Yale & Towne Manufacturing Co., Stamford, Conn., has developed model K24C, a four-wheel drive tractor having a maximum draw bar pull of over 4000 lb., and equipped with four-wheel brakes. By the use of four driving wheels maximum tractive effort is secured on oily floors or when driven outside over snow and ice.

The four-wheel brakes operate through the differentials so that they equalize properly regardless of the conditions of the brake lining. The spring which automatically applies the brakes when the operator raises his pedal or steps off the machine are connected directly to the brake shoes so that disarrangement of the linkages between the pedal and brake lever would not prevent the tractor being stopped.

The brake pedal is large and requires little effort to hold in the release position. When it is permitted to raise the brakes are applied.

Steering is accomplished through a lever so arranged

that it may be folded up out of the way when the operator wishes to leave his seat. Steering knuckles on all four driving wheels are equipped with a ball flush



New Yale model K24C electric tractor

bearing which lightens the work of steering.

The driving units consist of two standardized units connected in parallel at the controller. Use of standard units permits complete interchangeability with any of the Yale K line of industrial trucks. A 48-volt motor is regularly furnished and 23 to 1 gear ratio.

Husted Steering Wheel

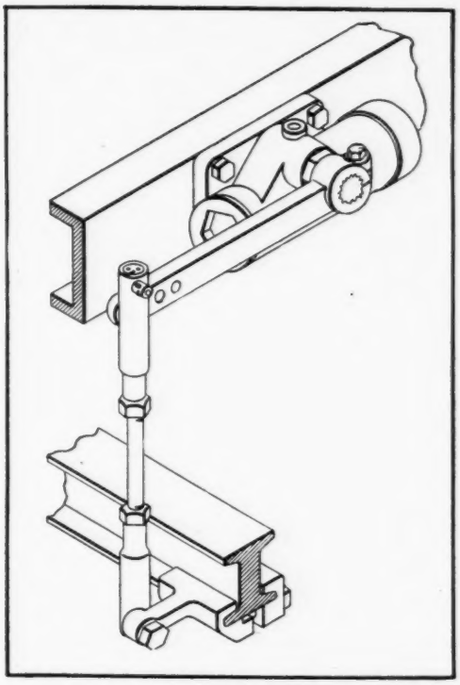
A NEW type of steering wheel known as the Husted safety steering wheel, which already has been adopted by seven car manufacturers as original equipment, is being manufactured by the American Hard

Husted safety steering wheel

Rubber Co., 11 Mercer St., New York. It consists of a one-piece sheet steel stamping of the rim and spokes which is drawn up in U-Bar shape to give maximum strength for a certain weight. Over this skeleton is bonded a covering of Ace hard rubber, forming a smooth gripping surface for the driver. This construction makes possible a rim of smaller cross-section, for which it is claimed that it improves the appearance and provides a surer grip. The Husted wheel is said to be unbreakable and therefore to make for safe control.

Flentje Shock Absorber

ERNST FLENTJE, one of the pioneers of the shock absorber industry, has recently made a number of improvements in his hydraulic shock absorber, and the latest model, just announced, is known as the Improved Double-Acting Hercules. The hydraulic cylinder is fastened to the outside of the frame channel for both front and rear mounting, while the link extending from the shock absorber arm to the axle is connected to the latter by a steel bracket. Spring play over a short range to both sides of the normal position is not checked in any way. Compression of the spring through a wider range is "softly cushioned," in the words of the manufacturer. At the beginning of the rebound, the reaction



Flentje Hercules oil-and-air shock absorber

is taken by the frame in a lengthwise direction, thereby preventing any sharp snap or whip. During the rest of the rebound motion a soft cushioning action is produced. It is claimed for the double-acting principle that it tends to prevent loss of traction. The travel of the hydraulic piston is 6 in. for front, and 8 in. for rear absorbers. The new model is said to be much lighter than the older type.

The manufacturer of these shock absorbers is Ernst Flentje, 1643 Cambridge St., Cambridge, Mass.

THE ALEXANDER MILBURN CO., Baltimore Md., has recently developed a new light-weight torch which cuts or welds with the mere interchange of tips. It is made to operate with either oxygen and acetylene, oxygen and hydrogen or other gases.

This new torch, designated as Type RI, is similar to the Milburn combination torch Type NI. It weighs only 40 oz., but is capable of cutting metal up to 12 in. thick and of handling all sorts of welding work. The torch has only two gas tubes; the high pressure oxygen thumb button remains in open or closed position without sustained pressure from the operator's thumb; the forged bronze torch heads have a tensile strength of 60,000 lb. per sq. in.

U. S. Exports of Cars, Trucks, Tires and Parts

COUNTRIES	PASSENGER CARS										TRUCKS					
	Up to $500		$500 to $800		$800 to $1,200		$1,200 to $2,000		Over $2,000		Up to 1 Ton		1 to 2½ Tons		Over 2½ Tons	
	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value
Austria			4	$2,385	2	$2,378	1	$1,230	3	$7,991	3	$2,964				
Azores and Madeira Islands	1	$300			4	3,748	1	1,105	1	1,827	8	3,672	3	3,071		
Belgium	97	44,374	254	155,418	577	478,723	291	389,831	58	132,159	336	141,936	6	7,477		
Bulgaria			2	1,084							3	1,423				
Czechoslovakia			31	20,422	5	4,463	4	6,087	3	5,990	2	1,188				
Denmark and Faroe Is.			9	5,973	101	80,948	52	63,782	5	13,292	388	165,864	19	22,790		
Esthonia			1	663												
Finland			7	4,690	103	90,826	24	28,382	3	6,791	30	16,821	21	28,285		
France			14	7,780	165	147,489	35	45,137	27	67,374	58	34,294				
Germany			133	67,723	129	115,682	36	55,695	102	236,275	88	46,315	3	3,940		
Gibraltar			192	87,748												
Greece			34	20,233	45	34,966	21	26,013	3	8,407	2	1,504	4	3,811		
Hungary			8	4,239	12	10,840	11	15,062	1	2,106			10	5,142		
Iceland					1	762					4	1,836	1	921		
Italy			6	3,426	25	21,229	37	47,743	10	25,550	1	895				
Latvia																
Lithuania					6	4,040	1	1,442								
Malta, Gozo and Cyprus Is.			3	2,202	3	2,165	2	2,654					3	2,164		
Netherlands	6	2,990	59	35,591	227	195,913	33	40,506	10	21,358	12	10,586	38	44,372		
Norway					59	51,126	19	21,925	2	4,790			20	29,967		
Poland and Dantzig	2	756	6	3,558	25	20,089	1	1,200	2	5,056	4	3,542			1	3,200
Portugal	1	437	145	39,858	51	42,264	11	14,160	4	9,457	46	20,866	6	5,237		
Rumania			18	11,906	51	39,799	31	30,118	8	19,288	5	3,681	1	500		
Russia	1	300			1	880	12	16,343	7	16,631			10	9,936		
Spain	7	2,709	181	125,827	371	320,800	322	417,384	78	173,663	321	159,301	27	38,480		
Sweden			48	31,633	147	123,084	122	146,919	29	64,751	55	40,345	27	37,007		
Switzerland			13	9,009	34	31,426	53	71,862	22	48,002			5	8,150		
Turkey	6	2,850	29	17,436	20	17,841	1	1,524			13	7,005				
United Kingdom	44	18,285	413	189,982	359	223,809	50	76,457	29	51,813	378	191,518	24	34,678	2	4,568
Irish Free State					4	3,121	5	7,197	1	3,755	12	7,973	1	1,147		
Yugoslavia			9	4,610	5	4,344	3	3,939			2	918	1	1,066		
United States																
British Honduras																
Canada	175	37,138	338	213,255	225	194,632	159	216,604	65	208,871	36	26,634	180	125,451	36	35,770
Costa Rica					10	7,711	18	19,112	4	8,616	12	8,507	9	10,889		
Guatemala			2	1,340	14	11,734	14	17,281	8	19,248			17	24,018		
Honduras							1	1,450					3	2,950		
Nicaragua	3	1,224	2	1,432	20	17,556	4	5,558					3	4,764	2	9,540
Panama			13	8,119	46	42,084	30	36,867	12	31,482	17	11,963	16	24,809	1	5,695
Salvador	1	400	5	2,700	11	9,105	3	3,397	2	6,896	7	7,413	9	21,103		
Mexico	236	66,139	96	66,185	78	74,959	35	48,477	6	14,510	79	46,904	28	35,305	8	29,483
Miquelon																
Newfoundland					1	816					1	430	1	880		
Barbados			1	610	1	721	1	1,815								
Jamaica	1	250	9	5,529	21	16,104	2	2,205	5	12,162	3	1,568	8	10,061		
Trinidad and Tobago					16	12,240					4	3,031	5	6,354		
Other British West Indies	20	4,431	2	1,350	5	4,665	2	2,595			6	1,830	2	1,742		
Cuba	8	2,800	82	50,704	125	113,685	70	93,460	26	77,279	65	39,917	41	123,897	26	111,483
Dominican Republic	2	950	47	22,682	21	18,135	13	13,918	2	4,120	23	11,665	5	8,085		
Dutch West Indies			2	1,434	17	14,982	2	2,303			8	6,418	4	3,715		
French West Indies	2	991														
Haiti			1	663	9	8,424							1	1,612		
Virgin Islands	1	200			1	800							1	1,400		
Argentine	384	143,480	1,598	855,544	718	581,523	112	143,519	43	104,311	2,627	1,198,403	134	252,275	19	50,110
Bolivia					6	4,740			1	2,951	2	1,842	1	1,448		
Brazil	551	214,256	98	56,128	225	188,468	47	57,469	33	84,915	638	296,120	36	55,945	19	13,987
Chile	4	1,602	45	20,180	111	89,485	49	59,213	11	27,945	11	8,768	29	45,447	5	16,721
Colombia			13	7,415	96	84,627	83	106,973	20	56,131	16	13,927	46	90,919	2	4,997
Ecuador	2	810	4	2,301			3	3,400					5	7,100		
British Guiana					5	4,240										
French Guiana																
Dutch Guiana													2	2,430		
Paraguay					12	10,211					2	1,558	4	5,090		
Peru			5	2,902	28	24,321	16	18,515	3	6,369	16	11,831	44	69,141	7	12,877
Uruguay			51	26,196	158	135,030	24	29,596	6	13,330	72	34,817	10	14,442	4	21,102
Venezuela			18	12,097	99	88,229	51	60,396	11	26,940	16	12,688	16	21,918	4	8,072
Aden			8	4,600												
British India	1	200	23	15,050	461	369,155	43	56,696	9	21,595	349	259,097	24	30,341	3	6,850
Ceylon					53	42,201	7	9,232	1	1,563	29	30,246	10	15,801		
Straits Settlements			12	9,357	29	26,064	2	2,870			10	7,904	11	12,112	2	4,183
China	2	900	26	23,052	11	10,146	7	8,814	2	6,730	7	7,743	2	2,239	1	2,040
Java and Madura	4	2,620	323	162,382	173	146,014	68	78,216	20	46,638	583	275,747	10	9,729		
Other Dutch East Indies			9	5,692	37	29,182	4	5,684	1	2,106	9	8,779				
French Indo-China																
Hejaz, Arabia and Iraq			1	488	18	14,953	2	2,298			14	11,165	2	2,757		
Hongkong			3	2,010	10	8,470			1	2,300	9	7,396				
Japan	52	22,909	178	115,001	78	79,427	29	38,932	12	35,477	17	9,574	10	60,862		
Kwantung	1	250	35	23,427	17	14,300					20	19,250	4	4,950		
Palestine and Syria	2	892	26	15,354	118	92,239	9	11,630			20	16,256	14	22,382		
Persia			3	1,438							8	6,170				
Philippine Islands			108	62,446	51	44,837	20	25,530	3	10,836	52	26,245	24	28,058	3	11,690
Russia																
Siam					7	5,674					22	17,252	8	4,928		
Turkey			25	12,489	3	2,640					15	5,168	1	820		
Other Asia																
Australia	1,732	626,925	824	415,509	631	457,377	253	285,311	75	154,108	911	412,212	126	154,781	10	18,745
New Zealand	393	151,526	389	244,001	152	119,142	77	89,502	4	7,430	168	76,220	32	44,693	2	4,420
British Oceania			1	596	3	1,938										
French Oceania											2	478				
Other Oceania																
Belgian Congo																
British West Africa			3	2,010	5	4,347	4	5,153			25	5,625	124	148,661		
British South Africa	204	77,270	190	124,394	528	441,435	155	184,293	14	26,795	159	94,275	217	160,458		
British East Africa			19	14,819	38	34,413	8	8,750			7	6,191	18	21,214		
Canary Islands			5	3,496	6	5,130	2	2,359			1	752	4	5,716		
Egypt	34	16,150	429	214,890	154	130,539	18	23,022	2	3,584	328	74,685	36	16,524		
Algeria and Tunis					14	10,500										
Other French Africa																
Italian Africa																
Liberia											2	459				
Madagascar					3	2,495							2	1,118		
Morocco			8	4,560	5	3,980	3	3,316			51	16,096				
Portuguese East Africa					27	21,798	2	2,297			6	5,099	6	7,966		
Other Portuguese Africa	4	900	1	560	12	8,991	6	7,499			17	15,062	4	5,892		
Spanish Africa	1	450			4	2,671	5	6,226								
Total	3,985	$1,448,665	6,700	$3,698,783	7,259	$5,962,040	2,642	$3,335,450	810	$1,951,564	8,273	$4,025,728	1,579	$2,023,633	157	$375,533

for November, 1927 | Canadian Exports

ELECTRIC VEHICLES		PARTS	TIRES						PASSENGER CARS						TRUCKS		PARTS	COUNTRIES
			Casings		Inners		Solids		Up to $500		$500 to $1,000		Over $1,000					
No.	Value	Value	No	Value	No.	Value	No.	Value	No.	Value	No	Value	No.	Value	No.	Value	Value	
		$6,941	1,953	$44,177	1,216	$15,510												Austria
		1,994	36	476	30	67												Azores and Madeira Islands
		186,265	4,493	71,452	2,198	15,146	3	91			23	17,661	2	2,344			$256	Belgium
		534	189	2,675	177	488	8	311										Bulgaria
		5,908	2,126	41,782	1,856	4,193	8	542										Czechoslovakia
		190,985	3,032	36,112	2,126	3,852	41	$1,424			5	4,345					74	Denmark and Faroe Is.
		372	37	531	37	92												Esthonia
		20,348	2,250	38,629	1,830	4,237												Finland
		429,029	1,616	24,348	915	3,191							1	1,542				France
		679,714	7,361	91,126	4,071	8,356	7	167					2	2,984			15,715	Germany
		7	32	319														Gibraltar
		13,047	1,783	26,288	1,408	3,106	25	1,217										Greece
		7,033	931	14,941	826	2,174												Hungary
		1,836	74	1,011	44	103												Iceland
		40,799	3,163	41,906	1,889	4,998	51	1,696										Italy
		801	20	182	10	18												Latvia
		131																Lithuania
		624	44	547	25	30			6	2,505					39	18,206		Malta, Gozo and Cyprus Is.
		106,946	4,280	84,718	2,319	5,560	2	62										Netherlands
		22,600	708	10,977	672	1,628	28	1,211			5	2,906	1	1,536			28	Norway
		2,408	2,479	32,864	1,902	4,395	2	91			2	1,524	2	2,311				Poland and Dantzig
		10,333	1,490	17,891	452	1,046												Portugal
		14,715	955	13,671	896	1,756			10	4,850	5	3,094			2	831		Rumania
		107,714	1,010	14,680	1,047	3,460							12	13,881			95	Russia
		76,216	10,315	152,196	5,327	12,467	356	15,201									20	Spain
		135,082	4,622	80,827	1,975	4,963	7	193			15	11,456	5	5,802				Sweden
		12,747	1,515	23,047	785	1,893	48	3,308										Switzerland
		8,820	42	638	16	58			8	3,335								Turkey
		356,907	8,525	112,164	3,610	9,283	285	5,994			518	400,715	201	256,743			5,115	United Kingdom
		11,457	46	564	88	128												Irish Free State
		4,023									2	1,800						Yugoslavia
									34	6,230	7	4,860	1	1,200			2,226	United States
		672			12	20					2	1,206						British Honduras
		1,242,685	1,448	21,461	4,095	8,979	101	2,261										Canada
		9,759	383	5,796	236	1,068			3	1,178	3	1,555	2	2,606	6	2,323		Costa Rica
		14,526	682	13,317	469	1,193			2	810	2	2,000						Guatemala
		1,454	214	3,495	145	403	14	497										Honduras
		1,941	52	984	36	105	4	299					6	6,984			9	Nicaragua
		18,949	1,440	17,503	389	984	18	1,320	18	7,287	12	6,684	13	17,237	90	34,844		Panama
		4,367	197	3,140	276	1,017	49	4,195			5	3,687						Salvador
		91,757	6,034	58,290	2,514	5,255	67	2,555										Mexico
		30																Miquelon
		1,880	23	273	64	111			1	175							186	Newfoundland
		1,226	88	919	176	485	4	96			5	3,820	3	3,502				Barbados
		23,076	223	4,300	72	178	171	4,915	16	6,552	14	12,023	7	8,110	30	11,880	98	Jamaica
		5,163	266	2,990	86	183	4	182	3	1,238	8	4,698	1	1,332			21	Trinidad and Tobago
		4,611	62	513	18	43			3	1,394	2	1,440	1	1,935	1	405	7	Other British West Indies
		82,781	10,154	99,857	12,125	18,457	738	33,508					7	8,605				Cuba
		23,753	2,247	35,141	628	1,692	37	1,530									14	Dominican Republic
		5,341	572	8,105	592	1,238			2	882	1	959			4	1,549		Dutch West Indies
		826	20	226					2	810								French West Indies
		6,003	229	4,566	261	666												Haiti
		980	2	26	4	8												Virgin Islands
		247,925	33,771	348,109	21,044	3,552	454	13,072	54	24,164	14	9,910	51	61,731			247	Argentine
		10,553	53	1,568	48	134			1	474	3	1,665			24	9,408		Bolivia
		227,811	3,152	36,105	1,269	2,362	117	4,040	15	7,185	6	3,910	4	5,524			14	Brazil
		64,032	2,390	48,868	1,699	3,517	231	7,783	28	11,657	24	15,044	1	1,137	46	17,576		Chile
		83,552	2,358	46,340	1,747	4,896	165	6,255	24	9,978	23	18,233	1	1,162	26	10,195	619	Colombia
		4,372	321	4,088	434	831	7	241	2	810								Ecuador
		2,215			12	20			1	411	5	3,027			4	1,661	97	British Guiana
			10	140	10	19												French Guiana
		376					3	111	1	405								Dutch Guiana
		2,946	284	3,957	386	879	10	245	8	3,668	2	1,190	1	1,226	8	3,097		Paraguay
1	4,088	50,576	1,167	23,890	752	2,294	10	352	3	1,313	1	566			42	16,234		Peru
		42,915	1,202	16,061	776	1,225	90	3,356	35	14,844	8	6,218	8	10,904			14	Uruguay
		34,839	1,549	30,520	1,382	3,781	3	404	6	2,418	1	552	8	9,524	10	3,920		Venezuela
		2,244	6	97	8	17	8	671	1	417								Aden
		207,232	5,263	69,671	2,351	5,524	323	10,541	238	104,126	67	47,724	32	36,880	642	239,079	22,257	British India
		22,808	626	11,066	252	574	32	1,336	40	16,963	34	23,878	2	2,082	52	22,555	163	Ceylon
		59,396	1,380	20,917	509	1,201	37	853	60	28,368	24	14,478			22	8,501	45,101	Straits Settlements
		30,752	2,613	30,805	2,361	4,183	12	264	5	2,459	16	11,503			8	3,077		China
		72,956	1,755	22,775	1,392	2,873	56	1,968										Java and Madura
		15,964	769	9,015	564	1,067	20	659	13	6,136	1	1,000	17	20,358			14,420	Other Dutch East Indies
		1,008	175	1,559	175	220												French Indo-China
		10,631	353	4,344	288	522			19	7,927	3	2,337			2	619		Hejaz, Arabia and Iraq
		15,488							7	2,857					8	3,079		Hongkong
		650,807	5,740	58,296	6,099	9,647	267	6,046			1	856	5	5,313			3,509	Japan
		3,279																Kwantung
		20,158	663	12,897	443	1,373			1	485								Palestine and Syria
		8,126	141	3,108	274	827												Persia
		37,143	5,648	71,185	4,299	9,037	39	1,029										Philippine Islands
		3,134																Russia
		5,489															9,387	Siam
		2,723	462	4,917	639	1,225	8	365										Turkey
		116																Other Asia
		414,218	3,893	62,148	1,406	3,285	476	26,628	92	34,581			1	1,705	52	30,637	53,838	Australia
		43,713	220	3,330	76	300	85	3,496	28	12,930	106	63,275	30	38,928			5,301	New Zealand
		767	5	72			4	93										British Oceania
		892	23	415	9	28	2	60										French Oceania
															1	434	38	Other Oceania
		559							1	405	6	3,518			30	11,615	583	Belgian Congo
		25,053	779	17,656	811	2,032			23	9,930	3	2,012	1	1,010	88	32,678	1,718	British West Africa
		130,311	1,080	16,871	529	1,694	39	1,164	5	2,041	11	5,748	2	2,108			22,428	British South Africa
		20,375	815	12,680	444	1,271			34	12,829	29	18,395	3	3,802	154	61,415	6,881	British East Africa
		1,486	334	6,856	448	3,213	6	358	4	1,802	1	595			4	1,549		Canary Islands
		87,444	933	13,933	1,092	2,481	175	6,220	56	23,715	4	2,276	8	9,890	38	14,712	75	Egypt
		240																Algeria and Tunis
		40	66	1,304	100	300									10	3,982		Other French Africa
		2,531																Italian Africa
		153																Liberia
		3,747																Madagascar
		7,141	960	24,982	1,006	4,283	20	635	1	495	5	3,020						Morocco
		4,700	800	9,200	500	802			13	5,308					30	11,670		Portuguese East Africa
		11,337	141	2,555	304	816												Other Portuguese Africa
		1,414	160	2,432														Spanish Africa
1	$4,088	$6,695,803	171,523	$2,316,403	115,874	$236,589	4,777	$181,115	927	$388,110	1,034	$747,353	442	$551,038	1,473	$577,731	$210,554	Total

AUTOMOTIVE NEWS SECTION INDUSTRIES
Philadelphia, Pennsylvania
January 21, 1928

Factory Operations Exceed Early 1927 Rate by 25%

PHILADELPHIA, Jan. 21—With a good start given to motor car sales by public interest in the new products exhibited at the New York show, production at the factories is at a high level for the season. It is estimated that current output is 20 to 25 per cent above the rate of the corresponding period of 1927. The carry-over of unsold cars into 1928 was exceptionally moderate, and dealers in many lines are in position to stock cars for demonstration as well as deliveries.

Motor vehicle registrations in the United States totaled 23,302,668 on Jan. 1, 1928, according to figures compiled by *Automotive Industries*. This compares with 22,046,957 at the beginning of 1927. Passenger cars alone totaled 20,333,988, against 19,207,808 on the earlier date while trucks and buses at 2,968,680 compared with 2,839,149 at the beginning of 1927.

Indicated domestic sales in the United States of cars and trucks were 2,740,000 in 1927 and roughly 1,900,000 cars and trucks were scrapped or otherwise removed from the registration lists. The industry was nearer to a purely replacement market than ever before. The number of cars alone scrapped was about 1,700,000.

Detroit Registrations Show 287 New Fords

DETROIT, Jan. 14—According to figures compiled by the Detroit Automobile Dealers Association, 52,593 new passenger cars were titled in Wayne county in 1927, compared with 77,913 in 1926. There were also 5138 commercial vehicles titled compared with 9004 in 1926, and 75 tractors compared with 109. In December 2293 new passenger cars, 357 commercial vehicles and eight tractors were registered. The figures also revealed that 263 new Ford passenger cars and 24 Ford commercial vehicles were registered during the month.

Hudson Increases Output

DETROIT, Jan. 18—Hudson-Essex has stepped up production to 1460 units a day, with many departments working on double shifts. Plans are under way to increase this rate as the season advances, and the company has decided to rush construction of a two-story factory 640 x 80 ft. as a means of increasing facilities.

Bassick Buys Plant

NEW YORK, Jan. 17—The Bassick Co., a division of the Stewart-Warner Speedometer Corp., has purchased the Bridgeport, Conn., plant of the Columbia Phonograph Co. at a price said to be in excess of $300,000.

Canada Bus Plant Located by G.M.C.

OTTAWA, ONT., Jan 16—A distinct automotive industrial development in Canada is the opening of the large factory plants of the Canadian Products, Ltd., at Walkerville, by General Motors of Canada, Ltd., to provide immediate facilities for manufacturing motor coaches and commercial vehicles in Canada. The plant will be in operation Feb. 3.

General Motors Truck Corp., a subsidiary of G.M.C. of Canada, will build motor coaches and bus bodies designed especially for the Canadian and export trade, which is a new departure of the corporation. Previously these had been built from the American designs at the main G.M.C plant in Oshawa, the Canadian headquarters.

Front axles for Chevrolet and Pontiac passenger automobiles also will be manufactured at the Walkerville plant in future, from which place they will be shipped to the Oshawa factories.

G.M. Buys Hayes Plant for Jackson Division

DETROIT, Jan. 18—General Motors Corp. has purchased the east side plant of the Kelsey- Hayes Wheel Corp. plant at Jackson, and will utilize it for expansion of the Jackson Steel Products Division. The amount involved in the transaction which incorporates a plant covering 20 acres and located across the street from Jackson Steel Products was not divulged.

The factory was originally the principal wood wheel unit for the Hayes Wheel Co. before the merger with Kelsey.

Hertz Heads Yellow Cab

CHICAGO, Jan. 17—John Hertz has resigned as chairman of the board of Yellow Truck & Coach Mfg. Co. and has announced that he will resume the presidency of the Yellow Cab Co. made vacant by the death of Charles C. Gray. It is understood that he will be succeeded as chairman of Yellow Truck by John A. Ritchie, now vice-chairman.

44,000,000 Car Tourists in 1928, Says A. A. A.

WASHINGTON, Jan. 17—A prediction that 44,000,000 people, who will spend $2,500,000, will take vacation motor tours during 1928, is made by the American Automobile Association through its touring bureau. The 1928 estimate is based on a study of the 1927 figures, with an allowance of 10 per cent increase for this year.

The figures of last year show that 28,000,000 people, driving in 7,250,000 cars, patronized hotels and tourists' camps. Another observation based on figures shows that tourists in camps average three times as long away from home as tourists stopping at hotels.

Bliss Elected President of Warner & Swasey Co.

CLEVELAND, Jan. 17—Philip E. Bliss was elected president of the Warner & Swasey Co. this week following 18 years association with the company during which he has been successively auditor, treasurer and executive vice-president. He also is now serving as president of the National Machine Tool Builders Association. Frank A. Scott becomes chairman of the board, succeeding Mr. Warner and Mr. Swasey, who have customarily alternated in this position. Messrs. Warner and Swasey, both of whom recently celebrated their eighty-first birthdays, continue as directors.

Rippingille Joins G. M. Export

NEW YORK, Jan. 19—E. V. Rippingille, of the Delco-Remy Co., has joined General Motors Export Co. and is sailing today for Berlin where will join the staff of General Motors, G. m. b. H. W. C. Dunn, formerly manager of the Ohio Crankshaft Co., Cleveland, has joined the general manufacturing division of General Motors Export, and Carl H. Getz, recently with MacManus, Inc., has been named head of the publicity section of the advertising division.

Ford to Hold Chicago Show

DETROIT, Jan. 18—The Ford Motor Co. reports that 1,052,842 visitors attended the special industrial exposition which the company held in Madison Square Garden in New York during automobile show week. The exposition will be duplicated during Chicago show week in the 131st Armory.

N.Y. Show Attracts 450,000 Attendance

Dealers Expect Heavy Buying Following Record Crowds —Trade Sales Active

NEW YORK, Jan. 16—The twenty-eighth New York show closed Saturday night with a record attendance of about 450,000 paid admissions, an increase of 9 to 10 per cent over previous years. While unusually favorable weather conditions throughout the week contributed toward this large attendance, increased interest on the part of the public, wide publicity given to new models prior to the show and the number of completely new features, especially in the popular priced cars, contributed toward drawing this record crowd.

Other features of the attendance were the fact that not only was the total attendance in excess of previous years but the attendance day by day exceeded corresponding days in previous shows and the attendance was more evenly distributed throughout the day.

Although no figures are available as to new business, exhibitors of complete cars and trucks have expressed themselves as entirely satisfied with the results of the show and are optimistic for the spring season business.

In the accessory and shop equipment section the large attendance was unusually gratifying. This was due largely to jobber cooperation with the makers and the presence of jobbers' salesmen, who made it a point to invite their customers to see the exhibits and to show them around.

Keeping the shop equipment section closed to the general public until five o'clock each day brought the show back to a trade exhibit, in the opinion of those responsible for this feature. A great deal of immediate business was placed during the week in this section of the show, due to the ability of jobbers' salesmen to stimulate interest and follow this interest up. From the point of view of trade attendance alone, this section of the show is regarded as the most successful held since the infant days of the industry.

Expect Record Chicago Show

NEW YORK, Jan. 18—The show department of the National Automobile Chamber of Commerce left for Chicago Sunday night to prepare for the annual show in that city. A record Chicago show, just as the New York show broke all previous records, is anticipated.

Parker Awarded $367,174 in Action Against Ford

DETROIT, Jan. 18—Judge Arthur J. Tuttle in Federal Court has determined $367,174 plus interest at 5 per cent since Feb. 14, 1927, as the amount Ford Motor Co. owes the Parker Rust Proof Co. for infringement of patent.

The case was started four years ago with the Parker interest asking $1,000,000 damage. It was contended that in four years Ford had treated 50,000,000 tons of metal. The court two years ago ruled in favor of the plaintiffs and then ordered the master in chancery to determine the amount of damages. Both plaintiffs and defendants appealed the master's decision and Judge Tuttle's decision practically coincides with the master's findings.

LeBlond Interests Back New Plane Engine Plant

CINCINNATI, Jan. 18—An airplane engine plant fathered by the R. K. LeBlond interests in Cincinnati will be in production in the next 90 days, according to information given out by officials of the R. K. LeBlond Machine Tool Co. Difficulties being met in negotiations for purchase of the equipment of the Detroit Aircraft Engine Co. alone are retarding efforts of the local concern to begin active operation.

Glenn Angle, owner of the engine patents, and Robert Winter, both of whom formerly were connected with the Detroit company, have been at the LeBlond plant several days making arrangements for the installation of machinery and tools for the new plant.

Engines to be manufactured are of radial air-cooled type and are to be made in two series of three sizes. In the first series, the three-cylinder engine develops 50 hp., the five-cylinder 70, and seven-cylinder, 90. In the second series the five-cylinder engine develops 110 hp., seven-cylinder 135, and the nine-cylinder, 165.

C. I. T. Profit $3,003,392, 1928 Outlook Favorable

NEW YORK, Jan. 20—The annual report of Commercial Investment Trust Corp. for 1927 shows volume of bills and accounts purchased as $188,271,263 compared with the 1926 record total of $206,113,930. Net profits were $3,003,392 as against $3,504,376 in 1926. The company next month will observe its twentieth anniversary.

In his report to stockholders, Henry Ittleson, president, said net profits for the second half of the year exceeded those of the first by $426,686, or 33 per cent. The company is in strong position, he said, and arrangements now in effect give every reason to look forward with confidence to a satisfactory volume of profitable business in 1928.

Balloon Bumper Formed

CHICAGO, Jan. 16—The Balloon Bumper Co. has succeeded the Automobile Equipment Mfg. Corp., occupying the same building, it has been announced by Julius Barnard, manager. The new organization will continue to manufacture the Balloon bumper, in addition to some new lines to be introduced at the Chicago automobile show. James W. Supporter has been retained as consultant engineer and designer, and George Sauers as engineer.

Business in Brief

A special review by the National Conference of Business Paper Editors and the Associated Business Papers.

NEW YORK, Jan. 19—Firmer money rates following the sale of government securities by the Federal Reserve banks caused unsettlement in the financial markets during the week. Unfilled orders of the United States Steel Corp. at the close of last month were the largest since March, 1926. New offerings of securities in December, including refunding issues, amounted to $841,835,150, as compared with $697,096,980 in November and $466,123,015 in December, 1926.

FREIGHT CAR LOADINGS

Railroad freight car loadings in the week ended Dec. 31 declined, numbering 679,600, as compared with 829,006 in the previous week and 734,281 in the corresponding period a year ago. Total loadings for the year amounted to 51,714,302 cars, as against 53,098,819 cars in 1926.

PETROLEUM OUTPUT

Production of crude petroleum also decreased, average daily output during the week ended Jan. 7 being 2,379,050 bbl., which compares with 2,419,750 bbl. a week earlier and 2,389,850 bbl. in the corresponding period a year ago.

FISHER'S INDEX

Professor Fisher's index of wholesale commodity prices was slightly lower last week at 95.1, as against 95 in the preceding week and 95.4 four weeks earlier.

BANK DEBITS

Bank debits to individual accounts, as reported to the Federal Reserve Board for the week ended Jan. 11, were 6.8 per cent below the level of the previous week and 30.1 per cent greater than the amount reported in the like period last year.

FEDERAL RESERVE REPORT

For the same period Federal Reserve banks reported that reserves increased $78,000,000 and open market purchases $5,400,000. Discounts declined $81,700,000, U. S. Government securities $82,100,000, note circulation $81,100,000 and deposits $18,900,000. Member banks reported that in this same interval loans and discounts decreased $188,407,000, demand deposits $98,507,000 and borrowings from the Federal Reserve banks $80,491,000. Investments rose $102,718,000.

Swedish Parts Duty 12%

WASHINGTON, Jan. 17—Automotive parts and accessories intended for the manufacture of motor cars, except chassis and bodies, became dutiable under a new item, 1098½, of the Swedish customs tariff at a rate of 12 per cent ad valorem, effective July 1, 1927, automobiles and parts not separately mentioned, remain at 15 per cent.

Ford Parking Brake Now on Transmission

Changes Model A to Meet All State Requirements—Other Makers Affected

DETROIT, Jan. 17—Ford Motor Co. will install a separate parking brake on all new cars, the factory announced today, to meet laws in effect in several states. As originally designed, the Model A service and parking brakes both operate on the same set of shoes, and the laws of the states in question state specifically that a separate parking brake shall be provided.

As a number of other automobiles employ the same type of braking system, there is considerable apprehension as to how far-reaching will be the effect of the braking discussion aroused.

While no statement has been issued by the factory regarding production, it is understood that installation of the brakes will not interfere with Ford output, which is reported to be averaging approximately 500 cars a day.

Regarding the braking situation, the Ford Motor Co. issued the following statement:

"To meet technical requirements of a few states, Ford Motor Co. is planning to equip all new Ford cars and trucks with a separate parking brake. This brake is on the transmission shaft and is of the two-shoe, contracting, full energizing type, operated by a hand lever, which will be located in the center of the car, slightly forward of the gear shift. Provision is being made to install it in cars and trucks not so equipped which have already been delivered to dealers, company employees and a few others."

Pennsylvania to Test All Cars

PHILADELPHIA, Jan. 17—Reported failure of the braking system on the new Ford car, and of a number of models by several other leading makers, to comply with the Pennsylvania motor vehicle code, has led the state highway department to ask all manufacturers to submit descriptions and diagrams of the braking systems on all models.

The state code requires that the braking system comprise two sets of brakes operating independently. Models in four other lines aside from Ford are reported not meeting this requirement and the state department has determined to call for braking plans from all manufacturers selling cars in Pennsylvania.

The braking efficiency of each model will be determined separately by the safety division of the highway department, assisted by engineers to be selected later. No licenses will be held up pending the results of the brake examination, but following this the state attorney general will rule whether makes not meeting brake requirements shall be denied licenses.

Rubber Restriction No Longer Required

NEW YORK, Jan. 14—Many British leaders in the rubber industry are convinced that there is no longer any need for the enforcement of the restriction law, F. R. Henderson, president of the Rubber Exchange, told the New York group of the rubber division of the American Chemical Society this week.

"What the British are trying to do now probably is to perfect the workings of the law before they rescind it in order that they may revive it at any time when it is needed," said Mr. Henderson.

DeGuichard and Tracy Named to Bank Boards

DETROIT, Jan. 14—Many persons prominent in the automotive industry in Michigan have recently been added to bank directorates in their respective cities.

At Flint, B. W. deGuichard, president and general manager of the AC Spark Plug Co., has been elected a director of the Genesee County Savings Bank; Charles E. Wetherald, plant manager of the Chevrolet Motor Co., and E. M. Cumings, president and general manager of Cumings Brothers, prominent automotive parts and accessories jobbers, have been added to the directorate of the Industrial Savings Bank, while Charles A. Cumings, secretary-treasurer of Cumings Brothers, has been elected first vice-president of the Union Trust & Savings Bank.

W. A. Tracy, of Pontiac, vice-president of Oakland Motor Car Co., has been elected a director of the Peoples State Bank, of Pontiac.

Now Noblitt-Sparks, Inc.

INDIANAPOLIS, Jan. 16—The name of the Indianapolis Pump & Tube Co., manufacturer of Arvin heaters, tire pumps and other equipment, has been changed to the Noblitt-Sparks Industries, Inc. Q. G. Noblitt is president, and Frank H. Sparks, secretary and treasurer. The company will continue to manufacture steel tubing in addition to its other products.

Fiat President Dies

NEW YORK, Jan. 16—Guido Fornaca, head of the Fiat Automobile Co., died in Turin, Italy, Jan. 15, after an illness of several weeks. Signor Fornaca was in his fifty-eighth year.

Opens Cleveland Office

HARRISON, N. J., Jan. 16—Driver-Harris Co., has opened an office in Cleveland at 7016 Euclid Ave. L. H. Waldrip will be in charge.

Studebaker Raises Power of Engines

Commander Now 85 hp. and Dictator 65 — Adopts Chromium Plating

SOUTH BEND, Jan. 17—Studebaker Corp. of America has made changes in the design of engines for its Commander and Dictator models, the new Commander engine being raised from 75 to 85 hp. at 2800 r.p.m. and the Dictator engine from approximately 45 to 65 hp. In both engines the bore and stroke remain the same, minor changes being made to raise the horsepower.

Valves in the Commander are 1⅞ in. in diameter and are chrome nickel steel for intake, and silchrome or chromel for exhaust. Pistons are light weight cast iron with four rings. The crankshaft is supported in four bronze-backed main bearings. The roadster model has Bohnalite aluminum alloy pistons with invar strut. Carburetor is Stromberg 1½ in. and fuel is supplied by means of a fuel pump fitted with a gasoline filter and glass sediment bowl.

Chassis changes include a frame with a new front end construction to increase rigidity and steady the radiator. New axle design permits use of wood, wire or disk wheels. Steering has been changed to cam and lever, with 15 to 1 reduction.

In the Dictator engine, the valve mechanism is now of vertical type with mushroom type tappets operated directly from a newly designed camshaft. Suspension is four-point and cast iron pistons with five rings are used. Valves are 1⅝ in. diameter, of chrome nickel for intake, and silchrome steel with 1½ in. for exhaust. Lubrication is by full pressure feed to main connecting rod and camshaft bearings.

As in the Commander, there are new axles front and rear to take the new four-wheel brakes and the rear axle has been strengthened to meet the additional power. Steering is cam and lever with 15 to 1 ratio.

Radiators in both models have been redesigned with a somewhat narrower frontal appearance. Chromium plating has been adopted for all exterior bright plated parts.

Industry Adds Workers

WASHINGTON, Jan. 17—A general increase in employment in the automobile industry during the next 30 days is indicated by telegraphic reports to the United States Employment Service of the Labor Department, covering employment conditions throughout the United States during January. Reports are similar from practically all automobile manufacturing centers, indicating that there will be an increased production in both passenger car and truck manufacturing plants.

Gears & Forgings Joins Big Interests

Van Dorn & Dutton, Ganschow, Fawcus and Ohio Forge in Combination

CLEVELAND, Jan. 16—Gears & Forgings, Inc., with general offices here, has been formed through a consolidation of the Van Dorn & Dutton Co., this city; the William Ganschow Co., Chicago and Peoria; the Fawcus Machine Co., Pittsburgh and Ford City, Pa., and the Ohio Forge Co., Cleveland. F. W. Sinram, formerly president of the Van Dorn & Dutton Co., will be president of the new organization.

Capital will be $3,050,000 with assets of $6,000,000. Sales are expected to approximate $7,500,000 a year.

A. F. Cooke, formerly vice-president and general manager of the Fawcus company, will be first vice-president of the new company and manager of the Fawcus division; William Ganschow, formerly president of the company bearing his name, will be second vice-president and manager of the Ganschow division; J. M. Clem, founder and general manager of Ohio Forge, will be third vice-president and manager of the Ohio Forge division and S. C. Dalbey, who has been connected with Ohio Forge, will be secretary and treasurer.

T. E. Leighton, formerly secretary of Van Dorn, will be assistant secretary and treasurer; C. F. Goedke, formerly secretary of Ganschow, will be Chicago district sales manager, and H. B. Newell, long associated with Fawcus, will be chief engineer. All of the officers above mentioned are directors of the new company.

Gears & Forgings has for its goal the most efficient sales and service force in the gear industry. District sales offices will be maintained at all logical distribution points in the country. Gears of all descriptions will be supplied, and the Van Dorn division will make automotive gears.

Kingston Products Corp. Names Executive Staff

KOKOMO, Jan. 16—Officers of the Kingston Products Corp., which was formed in 1927 through a combination of Kokomo Brass Works, Byrne, Kingston & Co., and the Kokomo Electric Co., have been announced as follows: J. Paul Johnson, president; Karl Krebser, vice-president; Paul T. Burke, secretary, and Frank C. Ryan, treasurer.

Mr. Krebser will be general factory manager; Mr. Burke will be general sales manager. Mark L. Grace, long identified with Kokomo Electric, will continue in charge of jobbing sales and Moore Kelly, will continue as Detroit district sales manager.

The engineering staff is headed by J. C. Coulombe with William Carlstrom as chief carburetor engineer, and Mark Zimmerer as assistant chief engineer in charge of Oil-Vac research.

F. W. Sinram

Former Van Dorn & Dutton executive who heads new Gears & Forgings, Inc.

Leeds, Tozzer & Co., Inc., Organized in New York

NEW YORK, Jan. 16—Leeds, Tozzer & Co., Inc., has been formed here with offices at 75 West St., to design and furnish special purpose machine tools and machinery and to represent manufacturers as sales agents. Edward L. Leeds is president and Brent A. Tozzer, vice-president. Mr. Leeds was recently vice-president and director of Niles-Bement-Pond Co., vice-president of Pratt & Whitney Co., and formerly assistant general manager and manager in Europe for Brown Hoisting Machinery Co. Mr. Tozzer was recently New York manager and sales engineer of the Niles Tool Works Co. and Pratt & Whitney Co. and formerly sales engineer and European representative of Lodge & Shipley Machine Tool Co.

Associated with the company are experienced engineers who have designed and built many special purpose machines and machines for production.

Form Procunier Company

CHICAGO, Jan. 16—The business conducted by W. L. Procunier has been incorporated under the name of Procunier Safety Chuck Co. and will be located at the same address and under the same management as formerly. Officers are H. G. Procunier, president; Mark H. Corley, secretary, and H. E. Corley, treasurer. The company manufactures tapping devices, quick change chucks and stud setting tools.

Expand McClaren Plant

CHARLOTTE, N. C., Jan. 14—The merger of McClaren Rubber Co. and Ajax, means an expansion of the local tire manufacturing plant and an increase of $2,000,000 annually in sales, according to C. R. Collins, now general manager of the McClaren company.

Rail Executive Tells S.A.E. Bus Faults

Better Body Insulation and More Accommodations Needed, Says Budd

NEW YORK, Jan. 14—Buses and railcars are destined to take the place of the railway for local passenger service, Ralph Budd, president of the Great Northern Railway, said at the annual dinner this week of the Society of Automotive Engineers.

Mr. Budd stated that since 1920 there has been a steady decrease in railroad passenger traffic which on analysis develops into a reduction in local and commuting traffic in spite of the increase in population of the United States. Through traffic, on the other hand, increased and it is in this field, according to Mr. Budd, that the chief future revenue of the railroad will be found. Total revenue of railroads was about $250,000,000 less in 1927 than in 1920. Mr. Budd also emphasized the necessity of correlating bus and train service.

Among the various characteristics of bus design which need improvement, Mr. Budd cited better body insulation, better baggage accomodation and better passenger accommodation arrangement in view of the limitation on overall length of buses. Mr. Budd emphasizing that his remarks concerned the intercity bus rather than the city type, also stated that in the opinion of many operators the former type is underpowered. An increase in power and reduction in body and chassis weight, perhaps through the wider use of aluminum, would seem to be indicated.

President J. H. Hunt of the society, called the attention of members to the fact that specifications of passenger cars are getting to be much alike and that the major job of the automotive engineer lies in the direction of refinements rather than new developments.

The election of Col. W. G. Wall as president of the society was announced. Other addresses were by J. Walter Drake, former assistant secretary of commerce, and W. E. Wickenden, of the Society for Promotion of Engineering Education, who officiated as toastmaster. Over 600 members attended the dinner.

Hercules Develops Models

CANTON, OHIO, Jan. 14—Intimation that several new models in internal combustion engines are to be produced within the near future, coupled with the declaration that its officers and directors anticipate a continuance of increased production this year, marked the stockholders' meeting of Hercules Motor Corp. An increased dividend payment of 33 1/3 per cent over 1926 and an increase of 100 per cent over 1925 was announced following the directors' meeting. All present directors were reelected.

Men of the Industry and What They Are Doing

Reeves, Vane and Hanch on Convention Program

Speakers to address the annual meeting of the Michigan Automotive Trade Association in Detroit, Jan. 25, have been announced by W. D. Edenburn, manager of the association.

Besides Alfred Reeves, general manager of the National Automobile Chamber of Commerce, who will speak on "What 1928 Holds for the Automobile Dealer," Charles C. Hanch, general manager of the National Association of Finance Companies; C. A. Vane, secretary and general manager of the National Automobile Dealers Association, and "Cap" Ashton, of the Automotive Equipment Association, will speak on trade problems.

Visitors will also be provided with tickets to the 27th annual Detroit Automobile Show which is being held that week. In view of the excellent program which Secretary Edenburn has arranged, it is expected that the 1928 meeting will attract the largest number of Michigan automobile dealers ever to attend the convention.

Nash in Philadelphia

Charles W. Nash, president of Nash Motors Co., was guest of honor at the annual dealers' luncheon of the Roberts Nash Motor Co., Philadelphia. Other Nash executives attending were Earl McCarty, general sales manager; W. H. Pettit, vice-president and general manager, and Thomas H. Kearney, counsel and director of the company.

G. E. Officials Change

H. F. T. Erben, assistant vice-president of General Electric Co., retired Jan. 1 after more than 40 years of service. At the time of his retirement he was also vice-chairman of the General Electric manufacturing committee. B. L. Delack has been appointed manager of the Schenectady plant. E. A. Wagner has been appointed manager of the Pittsfield, Mass., plant.

Day Named General Manager

Ralph Day, manager of the Hastings plant of the American Brass Co., has been appointed general manager of the Bridgeport Brass Co., succeeding R. T. Kent, resigned. Carl F. Dietz has resigned as president of Bridgeport Brass but no successor has been named. Mr. Day has been with American Brass Co. for 22 years.

Pollock Joins Nugent

George L. Pollock, vice-president and treasurer of the Burnside Steel Foundry Co. since the organization of that company, has resigned to become vice-president of the Nugent Steel Castings Co., Chicago.

Willys Celebrates 20th Anniversary

John N. Willys celebrated his twentieth anniversary as president of the Willys-Overland Co. this week with a dinner for 1000 dealers at the Astor. He was presented with a huge birthday cake.

L. G. Peed, sales manager, acted as toastmaster and introduced Mr. Willys, and George Graham, assistant to the president. Bert Acosta, trans-Atlantic flyer and Whippet owner, spoke informally on the developments in automotive engineering during the past year. R. M. Rowland, sales promotion manager, spoke on the value of training salesmen.

Join Toledo Steel Products

William J. Tighe and John W. Henderson have joined the sales organization of the Toledo Steel Products Co., the former covering the New York, New England and Pennsylvania territory, and the latter, Texas, Oklahoma, Colorado, New Mexico, Louisiana and Arkansas. Mr. Tighe was recently with Simplex Piston Ring Co., and Mr. Henderson with American Hammered Piston Ring Co.

Provan Succeeds Cooper

W. King Provan, formerly special factory representative of the Simplex Piston Ring Co. of America, Inc., has been appointed manager of the western branch of the Simplex company to succeed T. C. Cooper. Mr. Provan's headquarters will be in Oakland, Cal.

Loening Builds New Plane

NEW YORK, Jan. 14—Loening Aeronautical Engineering Corp. is preparing to market a new commercial amphibian plane designed to carry four to six persons. These planes are powered with air-cooled engines and are credited with long cruising range and remarkable pay load capacity. Beckwith Havens, pioneer aviator and vice-president of Airships Incorporated, has joined the Loening company as sales manager.

Zinke Appoints Robins

CHICAGO, Jan. 14—The Zinke Co. has appointed the H. M. Robins Co. of Detroit as its export representative in the sale of Romort products in all foreign countries except the Dominion of Canada.

Goodrich Appoints Tew to Head Sales Division

James D. Tew, first vice-president and director of the B. F. Goodrich Co., has been made general manager in charge of sales in connection with his other duties, following the recent resignation of W. O. Rutherford, who was vice-president in charge of sales since 1918.

Born in Jamestown, N. Y., in 1882, Mr. Tew graduated from Harvard with a degree in mining engineering. His father, Harvey W. Tew, was a brother-in-law of Dr. B. F. Goodrich, and was with Dr. Goodrich in the original organization in 1870, which was known as Goodrich, Tew & Co. In 1906 he started in the tire division of Goodrich at Akron, and was responsible for many improvements in production and tire design.

Mr. Tew's climb in the Goodrich organization was steady. He was made superintendent of the tire division in 1918, and in 1925 was promoted to the position of assistant works manager. One year later he was made works manager. In October, 1927, he was elected first vice-president.

Further changes in the executive personnel of the B. F. Goodrich Co. sales department show that T. A. Aspell, manager of the truck and bus tire department, is now assistant manager of the manufacturers' sales division; H. M. Bacon, former district manager on the Pacific Coast, is now special representative in Cleveland of the manufacturers' sales division; C. B. O'Connor becomes manager of the truck and bus tire department; E. R. Kenner becomes district manager in New York, succeeding F. E. Titus, now general sales manager for the new factory in Los Angeles; A. H. Leavitt, former manufacturers' sales representative in Cleveland, is now Akron sales representative for the truck and bus tire department, and J. T. Kennedy has been made manager of the manufacturers' sales division in Detroit, succeeding Gregory Flynn, who comes to New York to be in charge of the manufacturers' sales division in the East.

Tag Reciprocity Urged

KANSAS CITY, Jan. 14—At a meeting of the secretaries of state of the Middle Western States here, a resolution was adopted inviting all states in the union to pass uniform laws providing reciprocity in the matter of motor license tags.

Packard to Build Store

CLEVELAND, Jan. 14—A new sales and service plant for the Packard Motor Car Co., is one of the first building projects scheduled to get under way here in the spring.

Pool-Buying Bills Offered in Congress

Amendments to Webb-Pomerene Act Authorize Action to Check Gouging

WASHINGTON, Jan. 17—Two bills amending the Webb-Pomerene act, which would permit "pool" purchasing of rubber and automobile manufacturing industries, were introduced this week in the Senate by Senator Wesley L. Jones of Washington, and in the House by Rep. Walter H. Newton of Minnesota. The bills not only cover rubber, which however, is the largest commodity affected, but applies to the importation of raw materials which are not grown in substantial quantities in the United States.

The bills were introduced in the Senate and House following a joint conference by the representatives of the National Automobile Chamber of Commerce, General Motors, du Pont, and other manufacturer and consumer organizations, such as the American Automobile Association and the American Motorists Association, with representatives of the U. S. Department of Commerce.

The bill contains administrative provisions placing control of such combinations which the measure authorizes, under the Department of Justice and the Federal Trade Commission, with the same powers to punish infringements as are provided in the present Webb-Pomerene act. The measures following their introduction were referred to the judiciary committee in the House and to the committee on commerce in the Senate where hearings are to be heard at a later date.

A.A.A. Directors Approve Pooled Import Purchases

NEW YORK, Jan. 14—Directors of the American Automobile Association went on record this week as approving the enactment of a law similar to the Webb-Pomerene Act, which would authorize pooled buying of foreign products by interests in this country as the existing law authorizes pooled selling efforts abroad. The board also approved the adoption of a standard highway designation for United States highways and a law preventing advertisers from using signs similar to such designations.

Other recommendations favored included the establishment of cut-off routes around large cities to expedite through traffic; the establishment of a service to protect tourists in the way of standardizing tourist homes, especially in their sanitary arrangement; and the adoption of uniform speed limits throughout the United States.

The bus division also went on record as favoring Federal control of interstate buses.

Russian Registration 25% Under Repair

WASHINGTON, Jan. 17—Motor vehicle registration in Russia during the year ended June 30, 1927, totaled 21,035, which included 5180 vehicles under repair, according to statistics supplied the U. S. Department of Commerce. The 1926-1927 registration showed but little increase over the registration in the preceding year, which was 20,634. The state organizations controlled 77.9 per cent of the total registration; cooperatives, 6.6 per cent, and but 15.5 per cent of the automobiles were privately owned.

Peerless Eastern Dealers Hear German and Calfee

NEW YORK, Jan. 14—Four days after his appointment, Leon R. German, new general manager of the Peerless Motor Car Corp., made his bow to 350 of the company's distributors, dealers and guests at the annual Peerless show dinner in the Hotel Commodore. C. A. Tucker, general sales manager, acted as toastmaster. R. M. Calfee, chairman of the board and of the executive committee, outlined the expansion policies of the new management and paid a high tribute to the character and ability of the men now in control of the manufacturing and distribution of Peerless.

In a characteristically brief talk Mr. German pledged that the high quality of the product would be maintained under his direction. C. H. Larson, New York distributor and a director of the corporation, discussed the distributor's standpoint, as did also W. E. Butler, of Chicago, and J. C. Harvey, of Boston. A high note of the evening was struck by Fred J. Petersen, Philadelphia distributor, in a forceful talk on "Sales."

Representatives were present from all points along the Atlantic seaboard and from several foreign countries. Petersen Motors, Inc., distributors in the Philadelphia territory, had the largest representation at the dinner.

Canada Exports Increase

WASHINGTON, Jan. 17—Automotive exports from Canada during November totaled $2,264,232, according to revised figures furnished the automotive division of the Department of Commerce, by its representative in Ottawa. This was an increase of 8 per cent over the October exports. The average passenger car export value was $701. The average value in July was $479. Truck exports increased 27 per cent in November over October. The United Kingdom taking $657,458, and British India taking $188,730, were the leading countries of export.

Financial Notes

Ajax Rubber Co. has filed and had approved an application for listing of 300,000 shares of common stock on the New York Stock Exchange and 50,000 shares have been set aside for purchase by Harry L. McClaren for distribution to managers and employees at $10 a share at any time on or before Dec. 31, 1929. The Ajax company reports net loss of $1,182,113 for the first 10 months of 1927 after depreciation and other charges.

Graham-Paige Motors Corp. has applied for and received listing of 1,011,784 shares of common stock, no par value, with authority to change temporary interchangeable certificates for additional common stock on the New York Stock Exchange. This is a new listing necessitated by the recent change in name of the company.

Standard Textile Products Co. earnings in 1927 to the end of November after allowing for charges were in excess of the dividend requirements of the two preferred issues for the year, according to President J. T. Broadbent. The company has no bank loans. Plants are now operating at 90 per cent of capacity.

Martin-Parry Corp. reports net loss of $43,404 for the quarter ended Nov. 30, 1927, after expenses, interest, etc. This compares with net profit of $139,520 after Federal taxes, or an equivalent of $1.11 a share, for the corresponding quarter of 1926.

Triplex Safety Glass Co., which offered 10,000 shares of convertible $7 dividend preferred stock and 30,000 shares of no par common stock, announced that the issues have been oversubscribed and the subscription books closed.

Mack Trucks, Inc., has amended the certificate of incorporation to reduce authorized capital $16,253,000. This reduction represents the first and second preferred stock which was redeemed Dec. 31, 1927, and is thus made non-reissuable.

Brockway Motor Truck Co. has declared regular quarterly dividend of 50 cents and an extra dividend of 25 cents payable Feb. 1 to stockholders of record Jan. 14.

General Electric Sales Drop

SCHENECTADY, Jan. 16—Orders received by General Electric Co. during the year 1927 amounted to $309,784,623 compared with $327,400,207 for 1926, a decrease of 5 per cent, President Gerard Swope has announced. For the three months ended Dec. 31, orders amounted to $76,708,532 compared with $80,406,570 for the final quarter of 1926, also a decrease of 5 per cent.

Chance Vought Gets Order

NEW YORK, Jan. 16—Chance Vought Corp. has been awarded an additional contract for 41 Corsair observation-fighting planes by the U. S. Navy Department. The contract totals $725,000, including extra float-type landing gears, spare parts and delivery charges. Pratt & Whitney Wasp 400 hp. air-cooled engines are used.

Sheet Steel Mills on Capacity Basis

Heavy Backlogs Indicate Many Consumers Covered Through First Quarter

NEW YORK, Jan. 19—Steel production and shipments show a further bulge and appear to be still on the uptrend. Sheet mill finishing capacity is virtually fully occupied. While specifications against old contracts run heavy, there are not coming to light any new commitments that might involve a test of the market and thus decide the fate of the higher sheet prices that are supposed to apply to fresh business.

It looks as though the sheet mills had on their order books considerably more tonnage than had been thought. While estimates that the backlog of sheet mills borders on 1,000,000 tons have been characterized as exaggerated, it appears many consumers have covered their full first quarter requirements.

Meanwhile, the market for full-finished automobile sheets, which did not come in for any price advances, continues very easy, the bulk of the business being placed on a 4-cent basis, with rumors that here and there a slight concession is made from that price level. A Cleveland sheet-bar mill is reported to have cut $1 per ton under the going $34, Pittsburgh and Youngstown, quotation. Hot-rolled strip manufacturers are striving hard to lift the market to somewhat more satisfactory price levels. A better influx of orders is reported by automotive alloy steel makers. Prices hold steady. Automotive demand for bolts and nuts has broadened, and some fair-sized orders have been placed.

Pig Iron—Purchases by Middle West automotive foundries have tapered off. Demand now is chiefly for single carloads. In the valley market, malleable iron has turned a shade easier, but Michigan and Ohio prices hold fairly steady.

Aluminum—Automotive demand for foundry metal is gaining momentum. The domestic producer is believed to have booked considerable business for the first quarter requirements of passenger motor car builders. Remelted aluminum is moving more freely and prices have steadied. Importing interests are figuring on considerable business that overhangs the market. Bonded warehouse stocks continue comfortable.

Copper—Producers extend support to the market whenever the 14-cent level seems in danger of being crossed downward. Considerable latent European demand is looked for to quicken sales in the near future.

Tin—Although on quite a few days lately opportunities for picking up bargains in the market were numerous, consumers did not avail themselves of the chance beyond their routine needs.

Lead — Storage battery manufacturers show no great interest. The market is steady.

Zinc—Demand is slightly better and prices a shade firmer.

Berne Curfew Sets Hours for Car Use

WASHINGTON, Jan. 17—A curfew for motor vehicles in the Canton of Berne, Switzerland, is to go into effect at once according to a cable from Trade Commissioner Hill to the Department of Commerce.

The law provides that effective at once, automobiles may not be operated in the Canton between the hours of 11 P. M. and 4 A. M. in the morning in the summer, and between 9 P. M. and 6 A. M. in the winter.

Another unique phase of the new automobile legislation is that the speed limit on Sunday is 24 miles an hour, and on week days, 30 miles an hour.

Italian Car Exports Show Increase in 1927

NEW YORK, Jan. 16—Exports of automobiles by Italian manufacturers in the first 10 months of 1927 show an increase of 613 over the same period in 1926. Shipments to leading countries were as follows:

	1926	1927
Great Britain	3274	5055
Germany	2674	2672
France	1935	2463
Africa	2739	2880
Switzerland	2418	2201
America and Oceania	4138	2117
British India and Ceylon	1780	1487
Spain	1892	1643
Belgium	691	1152
Czecho-Slovakia	548	675
Holland	573	656
Poland	455	635
Denmark	346	470
Austria	260	367
Ireland	191	364
Albania	18	31
Other countries	5262	4938
	29194	29807

German Tariff on Parts 150 Marks per 220 lb.

NEW YORK, Jan. 17—Under the new tariff on automobile parts in Germany, one-cylinder automobile engines up to 110 lb., two-cylinder up to 220 lb., four-cylinder up to 880 lb., six-cylinder up to 1540 lb. and eight-cylinder up to 1980 lb., are subject to a duty of 150 marks per 220 lb. up to June 30, 1928. The duty is the same on parts of automobile engines recognizable as such and not subject to a different rate because of the materials of which they are made. Chassis and bodies are subject to the same duties as complete cars. Such parts as frames, radiators, friction clutches, transmissions, universal joints, rear axles, brakes and steering gears are amenable to the same rules; that is, they are subject to the highest rate of duty mentioned under the tariff schedule.

I.C.C. Investigator Recommends Control

Would Have All Common Carriers Under Federal Supervision

WASHINGTON, Jan. 16—Federal control of both buses and trucks operated as common carriers in interstate transportation was recommended today by Leo J. Flynn, attorney examiner for the Interstate Commerce Commission, in a report to the commission based upon his investigation of bus and truck operation throughout the country. The report will be argued before the commission Feb. 10.

The investigation has been in progress for a year, embracing hearings in 13 large cities. Testimony was taken from more than 400 witnesses, representing railroads, motor bus and truck operators and associations, chambers of commerce, tariff associations and the public.

Mr. Flynn recommends that all steam and electric lines now subject to the Interstate Commerce Act be authorized by law to engage in motor vehicle service, directly or through subsidiaries, upon obtaining a certificate of convenience and necessity; also that independent motor companies operating in interstate commerce also be subject to regulation.

The report shows that during the period 1920 to 1926, inclusive, the number of passengers carried by Class I steam railroads decreased from 1,234,862,048 in 1920 to 860,343,019 in 1926, and passenger revenues decreased from $1,286,613,273 to $1,041,822,049. Less-than-carload freight in 1920 was 89,901,495 tons and 68,296,686 tons in 1926. Carload freight increased from 64,439,482 cars to 71,060,904 cars.

British Tire Exports Gain

WASHINGTON, Jan. 20—British exports of automobile casings from the United Kingdom during November numbered 73,936, an increase of approximately 25 per cent over October exports. The leading countries of exports were British India, taking 14,380 casings; Argentina, taking 7563 casings and British South Africa, taking 6966 casings.

Abandons German Plan

NEW YORK, Jan. 16—The Studebaker Automobile Co. for Central Europe has issued a statement that in view of the adoption of the new German tariff duty on automobile parts it has abandoned the plan of erecting an assembling plant in Berlin-Johannisthal.

King and Bowman Combine

CLEVELAND, Jan. 16—The Joseph C. Bowman Co., industrial advertising agency, has been combined with the John S. King Co., Inc., national advertising agency, both of this city.

Sloan Asserts Need for Profit Thoughts

Tells Dealers Industry Thinking Too Much of Volume —Urges Accounting

NEW YORK, Jan. 14—A warning to the automotive industry was sounded by A. P. Sloan, Jr., President of General Motors Corp., at the Oldsmobile dinner this week. Speaking to 800 dealers, Mr. Sloan said, "The motor car industry today is thinking too much of volume production and sales and too little of net profit."

He emphasized as one of the most important needs of the dealer the necessity for a good accounting system, to the lack of which he ascribed most dealer failures. Such accounting systems would have to be in force to enable effective changes in factory-dealer relations if such should become necessary.

D. S. Eddins, vice-president in charge of sales of Olds, said that an Oldsmobile sales campaign is to be run during February with each salesman required to make four demonstrations a day. A new Oldsmobile service policy will also be announced shortly, a feature of which will be three free inspections during the first 90 days after sale, according to Mr. Eddins.

I. J. Reuter, president of Oldsmobile, said that plans for a companion car to the six have not been abandoned, but that the appearance of the larger car is not scheduled until about eight or ten months hence, due to desirability of further improving experimental designs as far as possible before introduction.

Meetings and Events Scheduled for Week of Chicago Automobile Show

FRIDAY, JAN. 27

Chicago Automobile Trade Association, Pre-Show Dinner and Meeting, Congress Hotel ..... 6.30 p. m.
Stutz Motor Car Co. of America, Inc., Salesmen's and Dealers' Meeting, Branch Office ..... 8.00 p. m.

SATURDAY, JAN. 28

Hupp Motor Car Corp., Luncheon and Meeting every day, Stevens Hotel.
Studebaker Corp. of America, Luncheon, Hotel Stevens .....Noon

MONDAY, JAN. 30

National Automobile Dealers Ass'n, Directors' Meeting, Palmer House .....10.00 a. m.
Packard Motor Car Co., Meeting and Luncheon, Packard Distributors and Dealers, Blackstone Hotel 9.00 a. m. to 5.00 p. m.

TUESDAY, JAN. 31

Automotive Electric Association, Annual Electrical Service Meeting, Congress Hotel .....10.00 a. m.
National Association of Automobile Show and Association Managers, Luncheon and Annual Meeting, Drake Hotel ..... 1.00 p. m.
National Automobile Dealers Association, Business Session, Palmer House ..... 2.00 p. m.
Oakland Motor Car Co., Meeting, Palmer House... 1.00 p. m.
Banquet, Palmer House .. 6.30 p. m.
Packard Motor Car Co., Meeting and Luncheon, Packard Distributors and Dealers, Blackstone Hotel 9.00 a. m. to 5.00 p. m.

WEDNESDAY, FEB. 1

Auburn Automobile Co., Luncheon, Blackstone Hotel ..... 1.30 p. m.
Automotive Electric Association, Annual Electrical Service Meeting, Congress Hotel .....10.00 a. m.
H. H. Franklin Mfg. Co., President's Luncheon, Drake Hotel ..... 1.00 p. m.
Gardner Motor Co., Luncheon and Dealer Meeting, Blackstone.
Nash Motors Co., Dealers' Meeting and Luncheon, Congress Hotel .....Noon
National Automobile Dealers Ass'n, Members' Meeting, Palmer House .....10.00 a. m.
Members' Meeting, Palmer House ..... 2.00 p. m.
Dinner, Palmer House ... 6.30 p. m.
Olds Motor Works, Show Dinner, Congress Hotel ... 7.00 p. m.
Peerless Motor Car Corp., Luncheon, Congress Hotel ....Noon
Velie Motors Corp., Luncheon and Meeting, Congress Hotel ..... 1.00 p. m.
Willys-Overland, Inc., Dealer Meeting and Banquet, Palmer House.

THURSDAY, FEB. 2

Graham-Paige Motor Car Co., Luncheon, Blackstone Hotel .....Noon

FRIDAY, FEB. 3

Chevrolet Motor Co., Business Meeting, Erlanger Theater ..... 1.30 p. m.
Banquet, Palmer House.. 6.30 p. m.

Reeves Says Style Aids Small Company

NEW YORK, Jan. 14—Speaking at a dealers' luncheon by Velie Motors Corp., Alfred Reeves, general manager of the National Automobile Chamber of Commerce, said that a medium sized company in a style field, such as the automotive industry is today, has a very definite place, providing its product is meritorious. Due to its close operating schedule and quick turnover, it is in position to respond more quickly to changes in the pulse of the market and is also much closer to its dealer organization and thus feels this pulse much quicker than a large organization. Mr. Reeves was with the old Velie company at the time it entered the automobile field.

Willard L. Velie, Jr., vice-president, told dealers of the company's extensive advertising plans and asked for orders as far in advance as possible. He said the company expected a 25 per cent increase in sales from the present dealer organization and with the addition of new dealers hoped for an increase of 50 per cent, bringing 1928 sales to 10,000.

F. D. Soper, assistant sales manager, told of a new 3½-ton truck to sell at $1,165 which the company is soon to introduce. Improvements in passenger car models featured other talks.

Durant Testimonial 1700-Car Load Order

NEW YORK, Jan. 14—W. C. Durant, speaking to Durant dealers at a dinner in the Roosevelt celebrating his 25 years in the automotive industry, said his company planned "to build just as many Star cars at the present list prices as we can obtain materials for. Furthermore, if you will give me the necessary volume, I'll reduce the price or raise your commissions."

He said dealers' discount on the Durant line would be 24 per cent and on the Star line 15 per cent "while we are getting volume production."

Following Mr. Durant's address, T. S. Johnston, his assistant, presented a testimonial to him signed by dealers ordering an aggregate of from 1650 to 1700 carloads of Durant and Star cars for immediate delivery.

Mexico Anticipates Best Car Sales Year

LAREDO, TEXAS, Jan. 16—Automobiles of American manufacture numbering 5250 were exported to Mexico through this port of entry during 1927, according to custom figures. Complete records of exports through other ports of entry for the year are lacking, but it is estimated that the total trade was more than 15,000 cars. It is stated that while the number of automobiles sold in Mexico last year was less than that of the preceding year their total value was more, due to the fact that higher priced cars are now in demand in that country.

It is indicated by statements of dealers in Monterey, San Luis Potosi, Tampico, Mexico City and other populous centers of Mexico that automobile sales in that country this year will mount up to new figures. Business conditions are more settled than they were at this time last year. Money is coming out of hiding and is again being invested in various kinds of enterprises.

Tipper Sees Steady Export Sales Gains

NEW YORK, Jan. 14—Expressing optimism over the outlook for foreign automotive business, Harry Tipper, general sales manager of General Motors Export Co., in a speech at the annual New York show dinner of the Overseas Automotive Club, said though the development of motor transport in other countries would never parallel the rapid growth in the United States, its ultimate growth will be as extensive.

Citing recent growth, Mr. Tipper said total gross sales had increased from $216,449,000 in 1924 to $410,000,000 in 1927. In number of units there was increase from 49,606 in 1921 to 543,000 in 1927. General Motors Export business increased from about 5 per cent of all cars and trucks exported from the United States in 1921 to about 41.6 per cent last year.

Car Sales in Japan Gain 33 1/3 Per Cent in 1927

WASHINGTON, Jan. 17—Sale of automobiles in Japan during 1927 totaled approximately 16,000 vehicles or a gain of 33 1/3 per cent over 1926, according to advices received by the U. S. Department of Commerce from its representative in Tokio. He reports that the "automobile business is one of the few healthy industries in that country, sales during the last quarter of 1927 having been considerably better than any other line."

Sales of medium-priced passenger cars are expected to show improvement over the third quarter, while sales of high-priced cars are reported remarkably good.

Citroen Flashes News

PARIS, Jan. 2 (*by mail*)—Andre Citroen today published his monthly newspaper "Le Citroen," which is claimed to have a circulation of 15,000,000 copies. It consists of a full page, presented in the form of a newspaper, appearing simultaneously in 100 French daily newspapers.

Coming Feature Issue of Chilton Class Journal Publications

Feb. 18—Statistical Issue—Automotive Industries.

Iowa Primary Highways Increased 320.5 Miles

DES MOINES, Jan. 16—The Iowa state highway commission last year expended $21,940,916, according to its report filed with Governor John Hammill. This amount represented $16,341,641 for paving 320.5 miles of primary road and other primary road expenses, and $722,303 on secondary roads. Maintenance amounted to $3,743,210 and the remaining amount was accounted for in administration and other expenses.

In addition to the paving the commission completed 456.7 miles of graveling, 734.6 miles of grading, constructed 1843 bridges and culverts as against the 1926 record of 91.1 miles of paving; 407.6 miles of graveling and building of about the same number of bridges and culverts. Since 1917 the commission has spent $113,344,803, including Federal Aid to the amount of $18,198,021. At the close of November there were 299 miles of paving uncompleted.

Change to Night Flights

KANSAS CITY, Jan. 16—Air mail service out of Kansas City, beginning Feb. 1, will be at night instead of in the day. The change is made to give better air mail service to Philadelphia, New York and all points east of Chicago. Definite schedules have not been announced.

Swiss Shipments Gain

WASHINGTON, Jan. 17—Automobile exports to Switzerland the first nine months of last year totaled 3332 vehicles, an increase of 379 vehicles over the 1926 American exports. The United States automobile exports to Switzerland were approximately three times those of France.

Pacific Northwest Set for Big Year

SEATTLE, Jan. 17—Automobile dealers in the Pacific Northwest are unanimous in expecting to sell substantially more cars this year. This is due to stabilization of the market by introduction of the long awaited models and equally by the splendid crops this year and favorable late fall and winter weather conditions which presage excellent crops in 1928. Stated in another way, the Pacific Northwest is not going to be scared by a presidential year, and the agricultural year which haunted the Pacific Northwest for several years has almost entirely disappeared.

For instance, the Pacific Northwest is marketing 110,000,000 bushels of wheat this year for $25,000,000 more than they got last year for the crop. Montana, which was sorely beset agriculturally for five years, came back with one of the best crops in history and heavy rains and deep snows indicate good crops in 1928, in the dry farming sections.

Lumber is one of the key industries of the Pacific Northwest and the United States will have a $7,000,000,000 construction program in 1928, which means the lumber industry will perk up.

Form Mid-West Alumni

DETROIT, Jan. 14—A mid-west section of the Alumni of the Technical School for Automobile Body Designers and Engineers has been formed here with Roy F. Anderson of the Hayes Body Corp., Ionia, president; Carl B. Parsons, Briggs Mfg. Co., vice-president, and Erwin L. Bare, Murray Corp. of America, secretary and treasurer. E. H. Vaillancourt, Hudson Motor Car Co., is chairman of the program committee.

Ditzler Appoints Randall

DETROIT, Jan. 14—Ditzler Color Co. has appointed the Fred M. Randall Co. to operate as its advertising agent in promoting the sale of its automotive finishes and enamels.

Calendar of Coming Events

SHOWS

All Western Road Show, Los Angeles, March 7-11
American Electric Railway Ass'n., Public Auditorium, Cleveland...Sept. 22-28
Amsterdam .....Jan. 20-29
Automotive Equipment Association, Coliseum, Chicago .....Oct. 22-27
Berlin .....Nov. 8-18
*Boston, Mechanics Bldg.....March 10-17
Brussels .....Dec. 8-19
*Chicago, National Automobile Chamber of Commerce, Coliseum, Jan. 28-Feb. 4
Copenhagen .....Feb. 23-March 4
Geneva .....March 16-25
Helsingfors, Finland .....Feb. 19-26
International Aircraft Show, Berlin, March 23-April 11
Laybach, Jugoslavia .....June 2-11
Leipzig, trucks only.....March 4-14
London, passenger cars.....Oct. 11-20
Paris .....Oct. 4-14
Prague .....Sept. 1-9
Rio de Janeiro .....May 3-13
Salon, Automobile Salon, Inc., Hotel Drake, Chicago .....Jan. 28-Feb. 4
Salon, Automobile Salon, Inc., Hotel Biltmore, Los Angeles.....Feb. 11-18
Salon, Automobile Salon, Inc., Palace Hotel, San Francisco..Feb. 25-March 3
United States Good Roads Show, Des Moines .....May 28-June 1
Zagreb, Jugoslavia .....April 29-May 6

*Will have special shop equipment exhibit.

CONVENTIONS

American Electric Railway Ass'n., Public Auditorium, Cleveland....Sept. 22-28
Automotive Equipment Association, Grand Hotel, Mackinac Island, June 10-16
Automotive Equipment Association, Coliseum, Chicago .....Oct. 22-27
National Automobile Dealers Ass'n., Annual Meeting, Palmer House, Chicago .....Jan. 31-Feb. 2
National Battery Mfrs. Ass'n., Chicago .....Feb. 15-16
National Foreign Trade Council, Houston, Texas .....April 25-27
Society of Automotive Engineers, Annual Meeting, Book-Cadillac, Detroit .....Jan. 24-27
United States Good Roads Association and Bankhead National Highway Association, Des Moines.May 28-June 1

RACES

Belgium .....Aug. 12
Daytona Beach, Fla., series of stock car races and world's speed trials, Feb. 15-23
Germany .....July 15
Great Britain .....Sept. 22
Indianapolis .....May 30
Italy .....Sept. 2
Spain .....July 29